MOURNING DOVE STATUS REPORT

1973

UNITED STATES DEPARTMENT OF THE INTERIOR
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UNITED STATES DEPARTMENT OF THE INTERIOR
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MOURNING DOVE STATUS REPORT, 1973

Compiled by

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Office of Migratory Bird Management

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ABSTRACT

Mourning dove population indices, as determined from the nationwide Call-Count Survey, decreased from 1972 to 1973 by 7% in the Eastern Management Unit and 8% in the Central Management Unit, but increased 8% in the Western Management Unit. The change in the Central Unit was statistically significant ($p<.05$). The 1973 indices were below the 10-year means (1963-72) by 9% in the Eastern Unit, 6% in the Central Unit, and 4% in the Western Unit. Regression analyses of the call-count data for 1963-73 indicate a statistically significant downward trend in dove breeding populations in all management units; mean rates of annual decline were 1% in the Eastern Unit, 2% in the Central, and 4% in the Western.

Changes in population indices are described by State and physiographic region. The 1973 indices were higher than in 1972 over one-third of the Nation, especially in the southern Atlantic coastal States, southwestern desert regions, and in several widely distributed areas of the northwestern and north-central States. However, population indices were lower in those regions which represent the remaining two-thirds of the U.S. land area. Regression analyses of 11 years' data, 1963-73, showed statistically significant upward population trends in nine midlatitude States representing 17% of the Nation's land area. Trends were significantly downward in 15 States comprising 35% of the land area, particularly in the mid-Atlantic, northern Great Plains, and Pacific border regions.

INTRODUCTION

Management of mourning doves in the United States essentially involves regulating hunting to achieve proper harvest. The Call-Count Survey, conducted annually since 1953 by Federal, State, and independent observers, provides population index data upon which wildlife administrators rely in setting annual regulations. This report describes the methods employed to obtain and analyze these data and presents the status of the breeding population of mourning doves in 1973.

Two versions of the dove status report, one preliminary and one final, are prepared annually. In 1973 the preliminary report was mailed to members of the Dove Regulations Committee a week before the June regulations meeting in Washington, D.C. This timely distribution was made possible by the promptness of cooperators in sending their data directly to the Office of Migratory Bird Management at Laurel, Maryland, immediately after completion of their surveys. The present report is the final version and contains additional survey data analysis.

Basic data gathering and analyzing procedures used in this report were similar to those used in 1972 (Ruos 1974).

PROCEDURES

The Call-Count Survey

Field studies have demonstrated the feasibility of the Call-Count Survey as a method for detecting annual changes in mourning dove breeding populations (Foote and Peters 1952). Since 1953, these surveys have been conducted throughout the United States on more than 800 established routes. Each call-count route has twenty 3-minute listening stations spaced at 1-mile intervals; the routes are usually on lightly traveled secondary roads.

Each route is conducted once between May 20 and June 10. Beginning in 1972, cooperators were instructed to run their routes between May 20 and May 31. An extension to June 10 was provided to cooperators unable to complete their assignments during the desired survey period. Intensive studies in the eastern United States (Foote and Peters 1952) indicated that dove calling is relatively stable during the survey period. Call-count surveys are not made when wind velocities exceed 12 miles per hour or when it is raining.

Records are kept of all doves seen or heard calling along the routes. The numbers of doves heard calling during the 3-minute listening periods are used for determining the population index. The numbers of calls per dove, and numbers of doves seen, are not currently used in the index calculations, but they are recorded. A detailed analysis of these supplementary data from past call counts has been completed (manuscript in preparation).

Routes on which no doves were heard or seen for 2 successive years are identified as Automatic Zero Routes. Once designated, these routes are no longer run annually. Nevertheless, they continue to be included in the survey analysis. Automatic Zero Routes are subject to periodic reexamination.

Population indices derived from the Call-Count Survey are believed to be biologically and statistically sound for detecting major year-to-year changes in breeding population levels for management units and for determining important long-term population trends for States and management units. Additional field research is needed to more accurately relate changes in the survey index to changes in the mated population. Specific relationships between calling doves and breeding pairs have been difficult to establish (Stone 1966).

Quality Checks of Field Data

As in previous years, all 1973 survey reports were examined for accuracy, completeness, and data comparability between identical routes run in both the current and preceding years. Indices presented in this report since 1967 have been derived from data meeting the 1972 standardized criteria for quality (Ruos 1974).

Randomization of Call-Count Routes

The original Call-Count Survey routes, established between 1951 and 1956, were frequently selected in areas of high dove density. These were gradually replaced by more than 900 randomly selected routes between 1957 and 1970 in all 48 conterminous States (Ruos 1972).

Breeding Density Index

The mean number of doves heard calling per route represents the Breeding Density Index (BDI). Before 1966, State indices were represented by unadjusted values. Management unit (Fig. 1) indices, however, were adjusted by the proportional area of dove habitat that each State represented within a management unit. Beginning in 1966, State BDI's were determined from indices within each physiographic region (Fig. 2) weighted by the proportional land area that the region represented within a State. Management unit indices were then obtained from State BDI's adjusted for differences in land area that each State represented within the unit. Current weighting values for States and physiographic regions within management units are shown in Tables 3 and 4.

Determination of Population Changes

Year-to-year changes in breeding population levels were determined from comparable data (Table 1). Routes run under acceptable conditions by the same observer in successive years were deemed comparable and data from different observers were accepted when changes in number of doves heard did not exceed expected values between years (Ruos 1972).

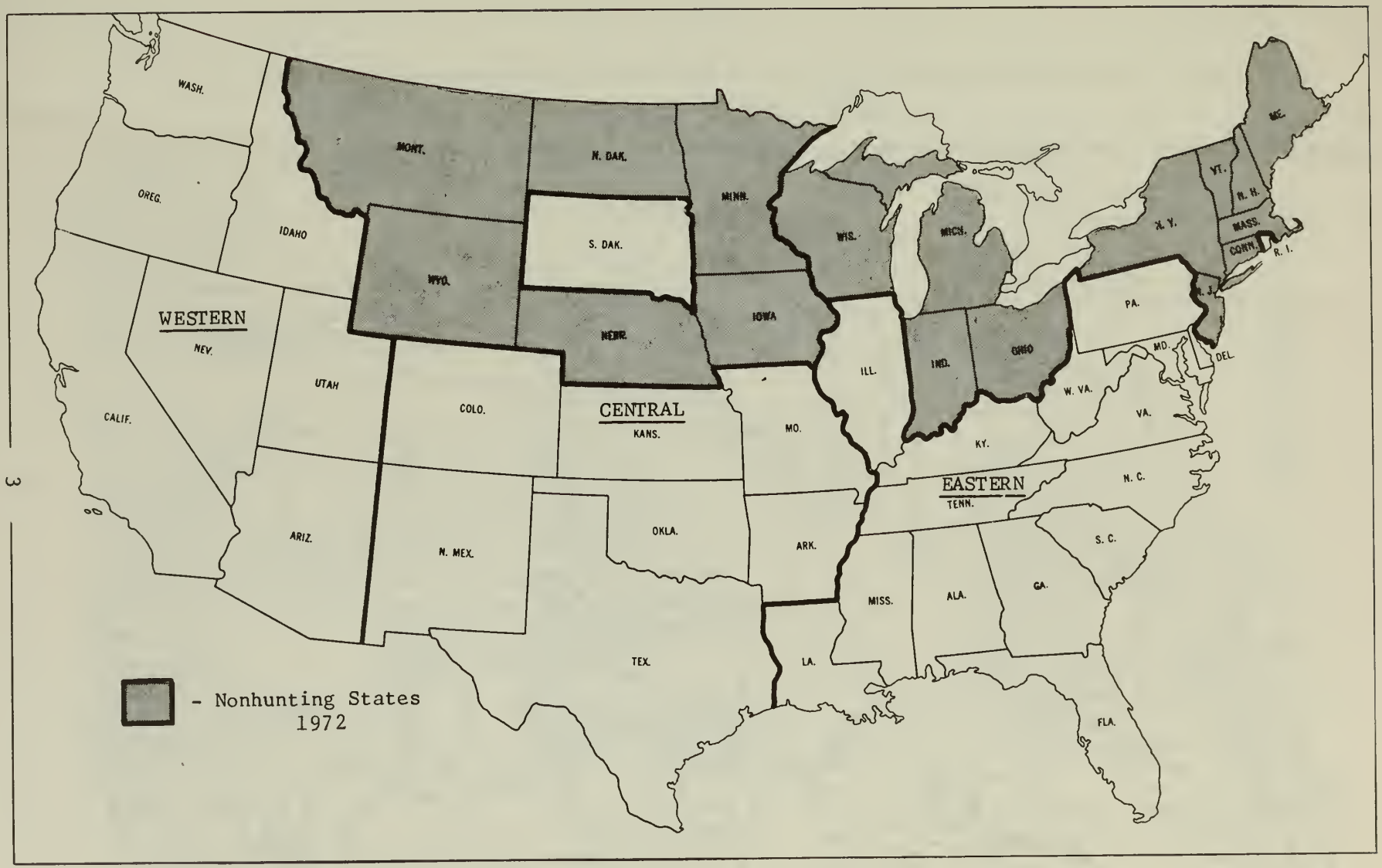
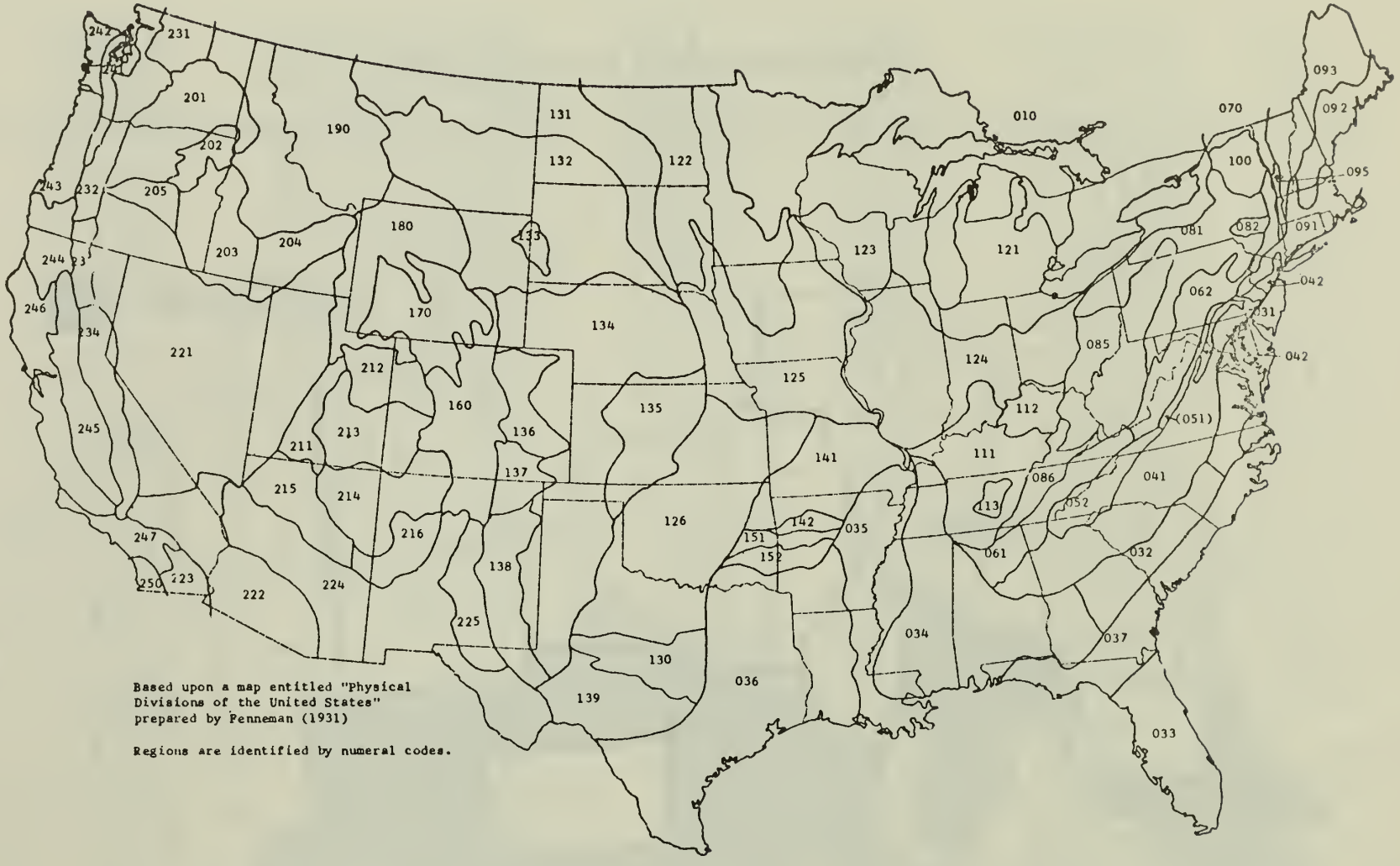


Fig. 1. Mourning dove management units.



Based upon a map entitled "Physical Divisions of the United States" prepared by Penneman (1931)

Regions are identified by numeral codes.

Fig. 2. Physiographic regions used in analysis of mourning dove population data, Revised 1970.
See page 5 for strata codes.

Physiographic regions used in analysis of mourning dove population data, revised 1970.

[Modified after Fenneman (1931)]

Description	Stratum Code
Laurentian Upland Division	
Superior Upland Province	010
Atlantic Plain Division	
Coastal Plain Province	
Embayed section	031
Upper Coastal Plain	032
Floridian section	033
East Gulf Coastal Plain	034
Mississippi Alluvial Plain	035
West Gulf Coastal Plain	036
Lower Coastal Plain	037
Appalachian Highlands Division	
Piedmont Province	
Piedmont Uplands	041
Piedmont Lowlands	042
Blue Ridge Province	
Northern section	051
Southern section	052
Valley and Ridge Province	
Tennessee section	061
Middle and Hudson Valley section	062
St. Lawrence Valley Province	
Champlain and Northern section	070
Appalachian Plateaus Province	
Mohawk and Allegheny section	081
Catskill section	082
Kanawha section	085
Cumberland section	086
New England Province	
Southern New England section	091
Northern New England section	092
Mountain section	093
Taconic section	095
Adirondack Province	100
Interior Plains Division	
Interior Low Plateaus Province	
Highland Rim section	111
Lexington Plain	112
Nashville Basin	113
Central Lowland Province	
Eastern lake section	121
Western lake section	122
Wisconsin Driftless section	123
Till Plains	124
Dissected Till Plains	125
Osage Plains	126
Great Plains Province	
Central Texas section	130
Missouri Plateau, glaciated	131
Missouri Plateau, unglaciated	132
Black Hills	133
High Plains	134
Plains Border	135
Colorado Piedmont	136
Raton section	137
Pecos Valley	138
Edwards Plateau	139
Interior Highlands Division	
Ozark Plateaus Province	
Springfield-Salem plateaus	141
Boston "Mountains"	142
Ouachita Province	
Arkansas Valley	151
Ouachita Mountains	152
Rocky Mountain Division	
Southern Rocky Mountains Province	160
Wyoming Basin Province	170
Middle Rocky Mountains Province	180
Northern Rocky Mountains Province	190
Intermontane Plateaus Division	
Columbia Plateaus Province	
Walla Walla Plateau	201
Blue Mountain section	202
Payette section	203
Snake River Plain	204
Harney section	205
Colorado Plateaus Province	
High Plateaus of Utah	211
Uinta Basin	212
Canyon Lands	213
Navajo section	214
Grand Canyon section	215
Datil section	216
Basin and Range Province	
Great Basin	221
Sonoran Desert	222
Salton Trough	223
Mexican Highland	224
Sacramento section	225
Pacific Mountain Division	
Cascade Sierra Mountains Province	
Northern Cascade Mountains	231
Middle Cascade Mountains	232
Southern Cascade Mountains	233
Sierra Nevada	234
Pacific Border Province	
Puget Trough	241
Olympic Mountains	242
Oregon Coast Range	243
Klamath Mountains	244
California Trough	245
California Coast Ranges	246
Los Angeles Ranges	247
Lower Californian Province	250

Long-term population trends were determined by applying the percentage change in the BDI between successive years to a Base Year (BY) index. The year 1967 was selected as the BY for all States except Maine, New Hampshire, Rhode Island, and Vermont. The BDI's for this BY were obtained by taking the mean of comparable routes run in 1966 and 1967 (Tables 1, 3). The four excepted States were assigned a 1971 BY index, representing the mean BDI of comparable routes run in both 1970 and 1971. Data from these four States are included, for the first time, in the Eastern Management Unit and the United States weighted means (Table 3).

Long-term trend data have also been determined for each physiographic region. Yearly BDI's for regions were adjusted to a 1969 BY index representing the mean BDI for routes accepted in 1968, 1969, and 1970 (Table 4).

Determination of Changes in Factors Associated With the Survey

Annual changes in the mean survey date, temperature at the start of the survey, and the percentage of route listening stations with high disturbance are presented in Table 2. Analysis of these factors was similar to those described for determining year-to-year changes in the BDI (Ruos 1972).

Statistical Evaluation of Data

The Call-Count Survey was designed to detect major-year-to-year changes in the breeding population index within each management unit (Foote 1959). In recent years, analysis of data revealed that observed differences of about 8, 9, and 13% between years within the Eastern, Central, and Western Management Units, respectively, would be statistically significant at the 5% level. Although the survey was not designed to detect a change in the BDI between years within States or physiographic regions, data from these areas were also subjected to statistical analysis.

Long-term BDI's, adjusted to a BY for all physiographic regions, States, and management units, were examined to determine whether significant trends were present. Trends were determined by linear regression analysis.

Determination of Population Distribution

The geographic distribution of dove densities has been determined from a study of BDI values adjusted to a BY for each physiographic region and State. For graphic presentation, the 1973 data have been assigned to one of five density classes. Changes in the adjusted BDI's greater than 10% between 1972 and 1973 within physiographic region and State also were determined.

FINDINGS

Decreases in indicated dove breeding population levels between 1972 and 1973 occurred over a wide area of the United States. The population indices decreased by 7% in the Eastern Unit and 8% in the Central Unit, but increased

by 8% in the Western Unit. All management unit indices for the 11-year period, 1963-73, are represented by statistically significant ($p<.05$) downward trends. All 1973 management unit values are below the preceding 10-year means, with the Eastern Unit index at a 20-year low. Current Central and Western Unit indices are above their 20-year lows established in 1971.

Status of the United States Dove Population

1973 Population Distribution

The density distribution of mourning dove populations in the United States is presented by States (Fig. 3) and by physiographic regions (Fig. 4). The most extensive area of high dove density was in the central States, especially in the eastern Great Plains, Central Lowlands, and in the lower Mississippi River plain. High densities were also observed in the Upper Atlantic Coastal Plain. A mean of 40 or more doves were heard calling per route in Kansas, Nebraska, Oklahoma, and South Dakota.

1972 to 1973 Population Changes

The United States BDI decreased 5.0% from 19.6 doves heard per route in 1972 to 18.6 doves heard per route in 1973 (Table 1). Population indices increased in physiographic regions (Fig. 1) representing 33% of the U.S. land area, decreased in 65% of the land area, and showed no change in 2% of the land area. In all management units, areas of increase were associated with lower mean population indices than for areas of decrease. Changes greater than 10% in the BDI are illustrated by State (Fig. 5) and physiographic region (Fig. 6). The 1973 indices were generally higher in regions of the southern Atlantic Coastal States and in Arizona. Lower population levels were prevalent over much of the United States. From 1972 to 1973, the combined hunting States index decreased 5.4% and the combined nonhunting States index decreased 3.9%. The 1973 nonhunting States index of 15.5 doves heard per route is the lowest value reported since initiation of the survey in 1953.

Analyses of several factors associated with the 1972 and 1973 surveys show no important yearly differences in mean survey date, temperature at the start of the survey, or the percentage of survey stops with disturbance great enough to jeopardize the hearing of calling doves (Table 2). In both 1972 and 1973, about 9% of the survey route stops were subject to high disturbance.

1963 to 1973 Long-term Population Trends

The 1973 indices for the United States and combined hunting States are above their 1971 record lows. The nonhunting States index, however, declined in 1973 to a 20-year record low. All 1973 indices are below their preceding 10-year means, the United States index by 6%, the combined hunting States index by 2%, and the combined nonhunting States index by 15% (Table 3).

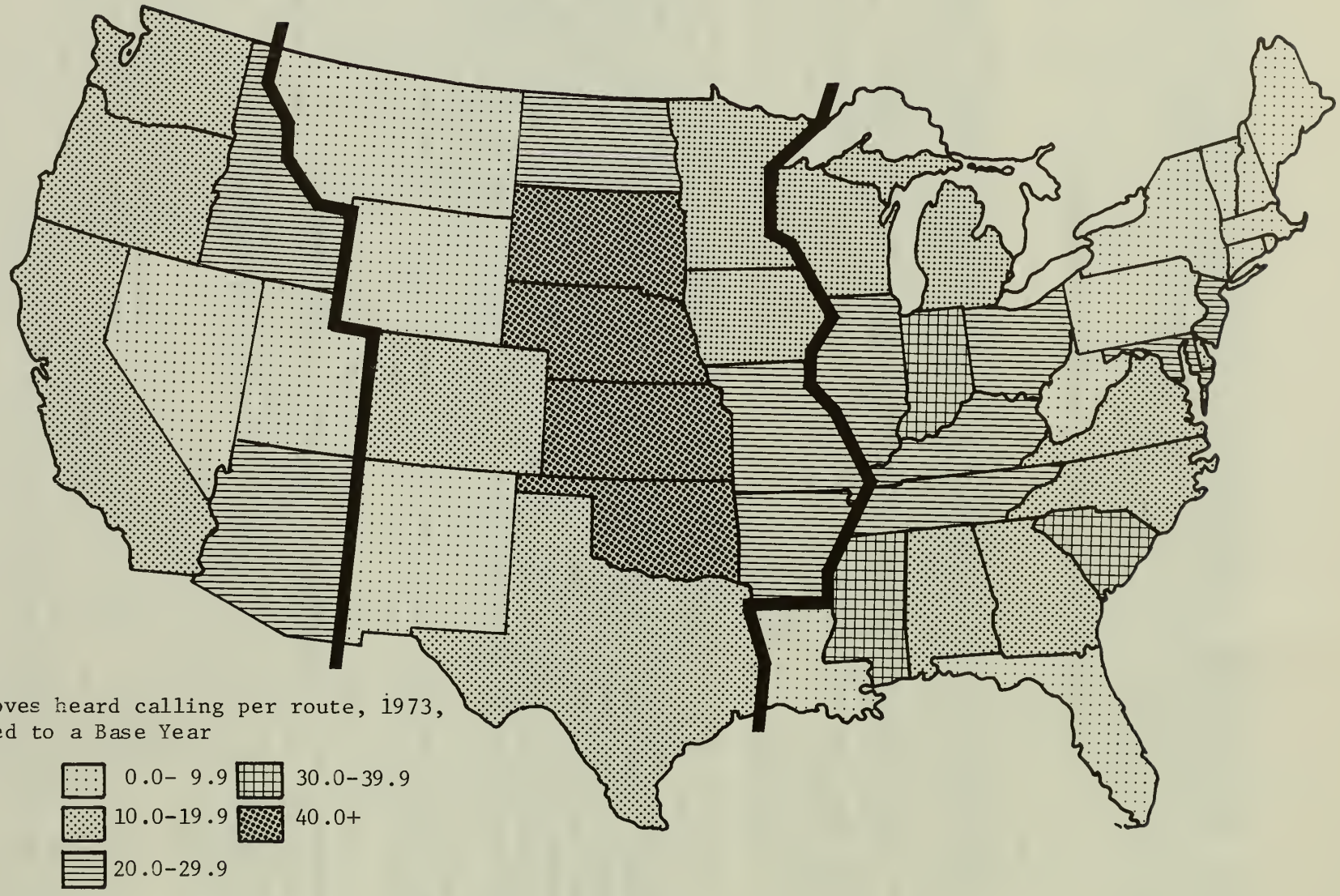


Fig. 3. Relative densities of breeding mourning doves by State in 1973.

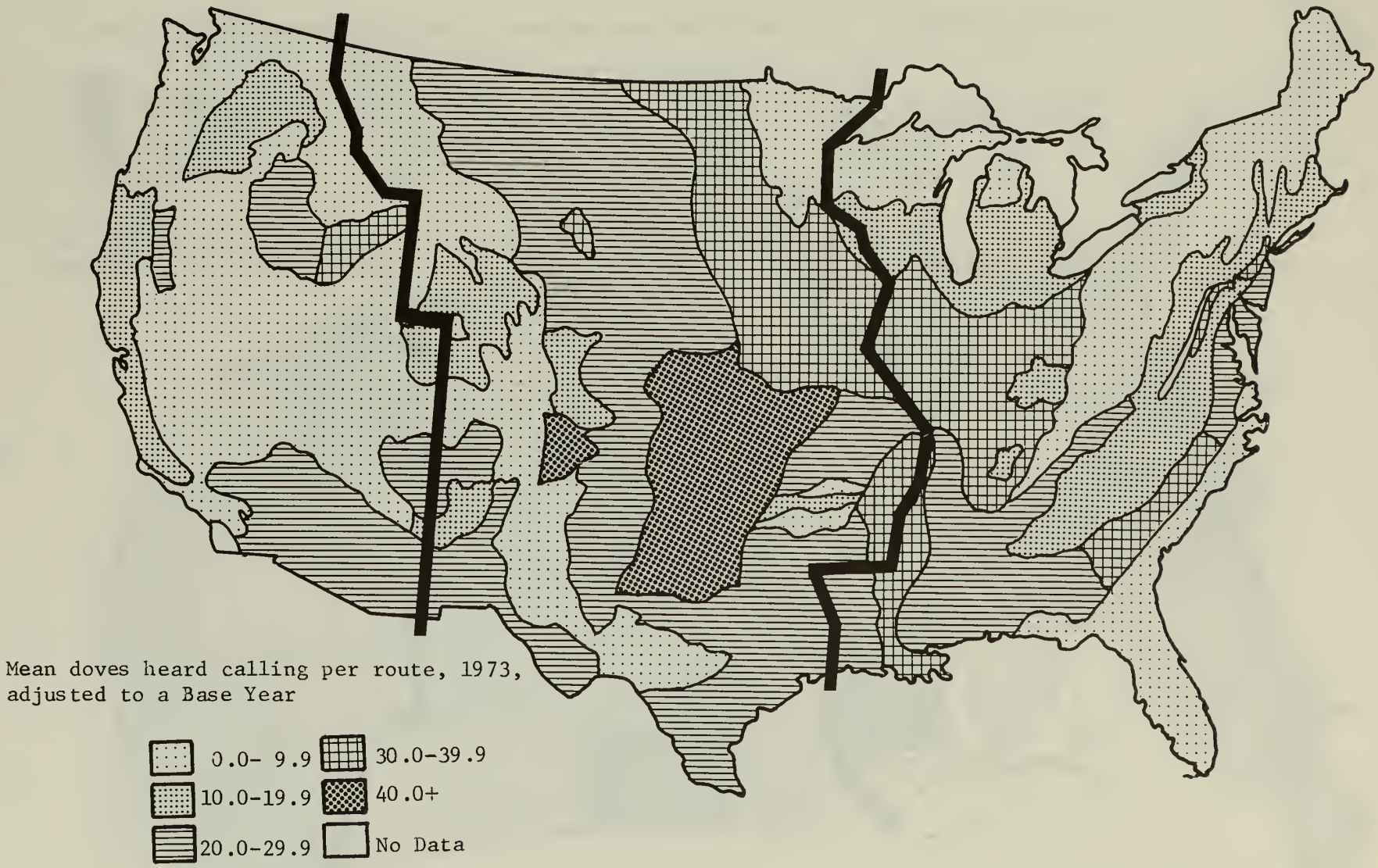


Fig. 4. Relative densities of breeding mourning doves by physiographic region in 1973.

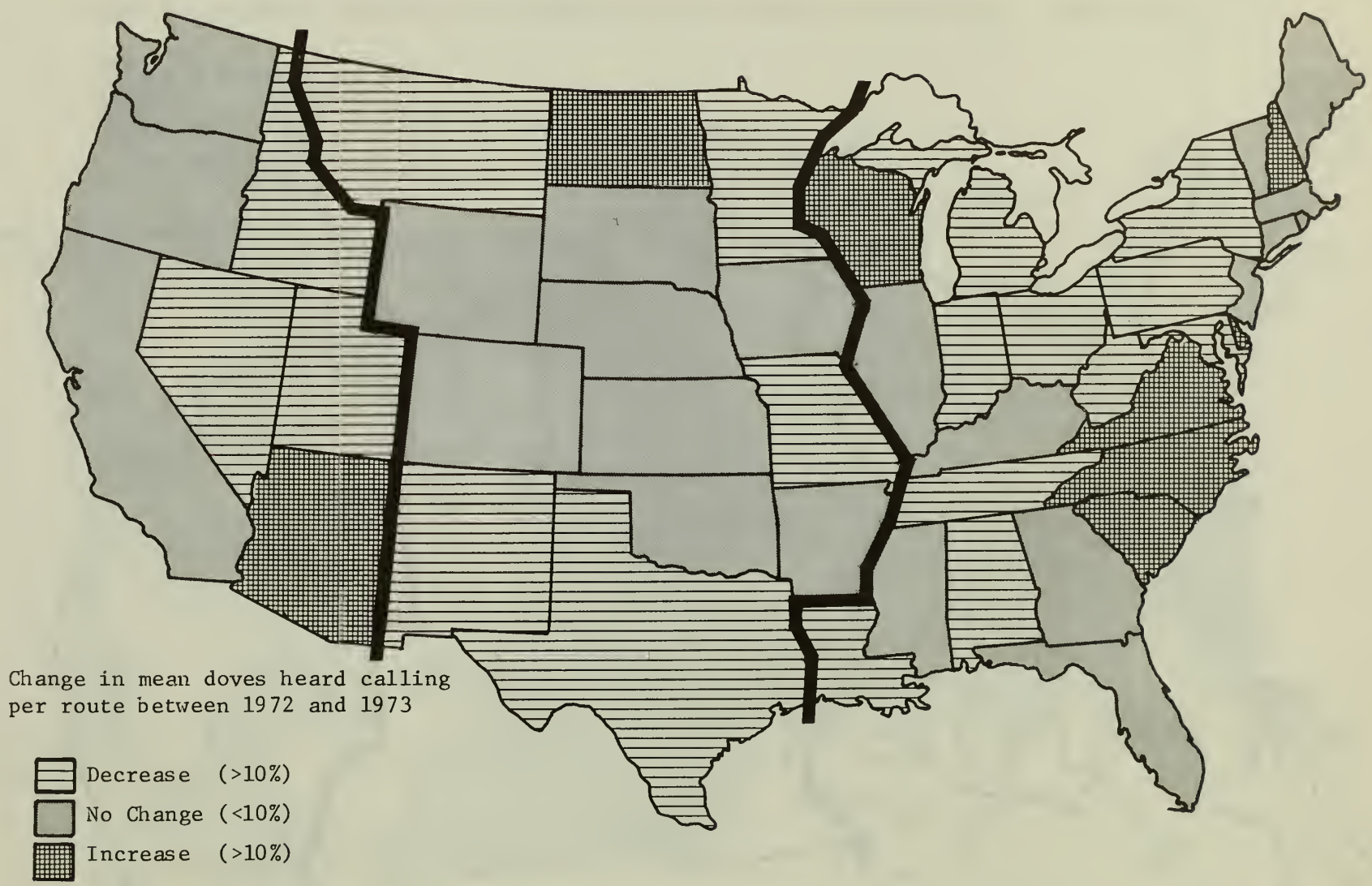


Fig. 5. Changes in densities of breeding mourning doves by State between 1972 and 1973.

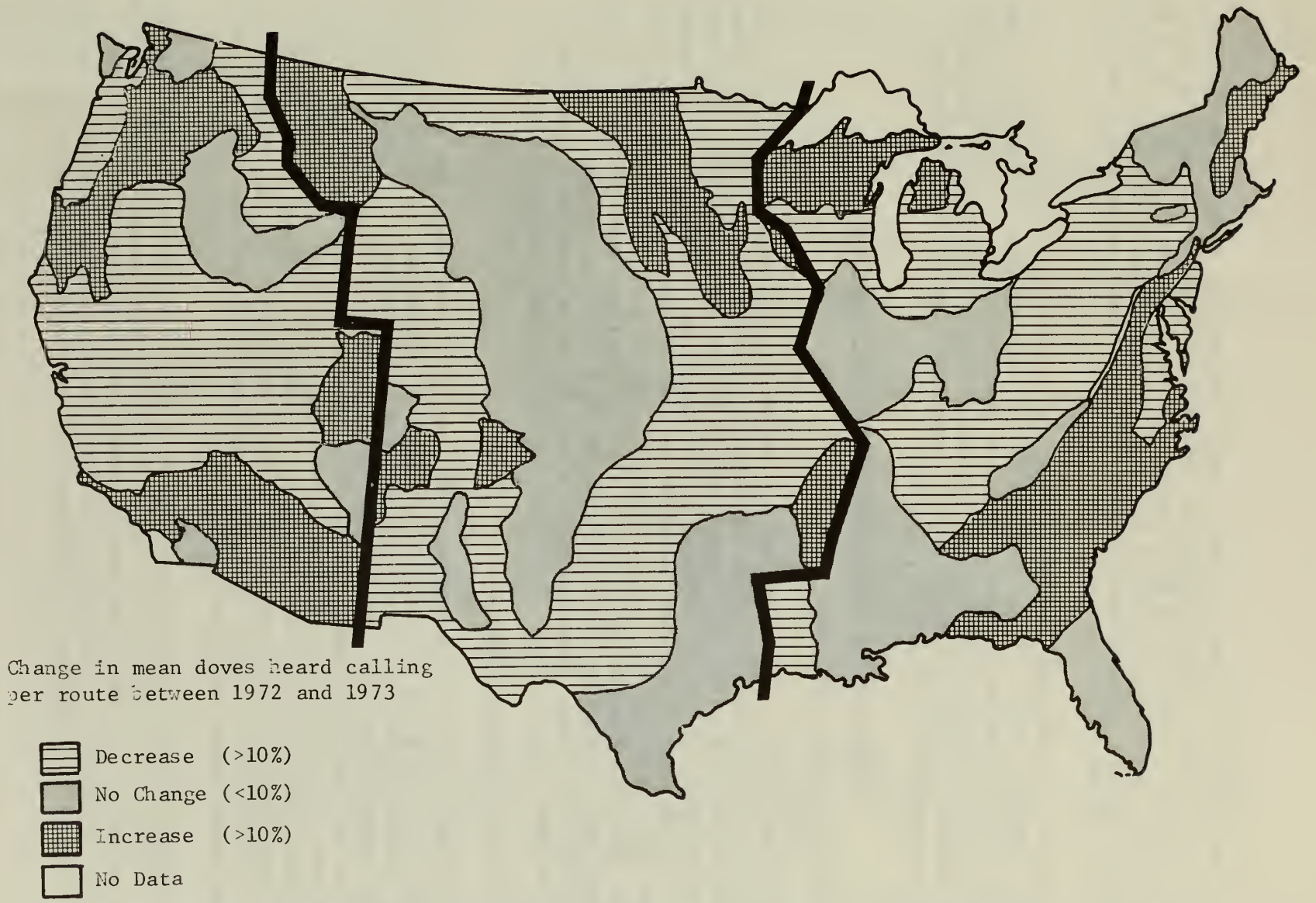


Fig. 6. Changes in densities of breeding mourning doves by physiographic region between 1972 and 1973.

Adjusted BDI's plotted in Figs. 7 and 8 reflect the trend in population indices since 1963. Linear regression analyses of these data (Table 3) are shown in Fig. 9. The indices declined at an average annual rate of 1.7% in the United States, 1.3% in the hunting States, and 3.0% in the nonhunting States. This study reveals a significant overall decline in nationwide dove breeding populations between 1963 and 1973.

Population trends as determined from linear regression analyses are shown by State (Table 3, Fig. 10) and physiographic region (Table 4, Fig. 11). From 1963 to 1973, statistically significant downward trends exist throughout parts of the mid-Atlantic and Gulf Coastal States, northern Great Plains, and Pacific border States. Trends are significantly upward in eight widely distributed, though predominately midlatitude, States.

Status of the Eastern Management Unit Population

1973 Population Distribution

The Eastern Unit represents 30% of the land area and contains 26% of the total United States dove breeding population. Sixteen of the Unit's 27 States permit dove hunting (Fig. 2). These hunting States represent 66% of the land area and contain 72% of the total breeding population in the Eastern Management Unit. Highest dove population densities in the Unit were in the west-central section, especially in the Central Lowlands, and in portions of the Upper Coastal Plain and Mississippi Alluvial Plain. Densities were generally low in the Appalachian Highlands, northern uplands, and the lower Atlantic Coastal Plain (Fig. 4). States represented by a mean of 30 or more doves heard per route included Indiana, South Carolina, and Mississippi (Table 1, Fig. 3).

1972 to 1973 Population Changes

The Eastern Unit BDI decreased 6.8% from 17.4 doves heard per route in 1972 to 16.2 doves heard per route in 1973 (Table 1). This was the greatest proportional change between years ever reported for the Eastern Unit. Population indices increased in those physiographic regions (Fig. 1) representing 25% of the total land area, decreased in 69% of the area, and showed no change in 6% of the area. The 1973 indices were higher than in 1972 in the southern Atlantic Coastal States and northern Wisconsin. Population indices were broadly lower throughout the remainder of the Eastern Unit (Figs. 5, 6). From 1972 to 1973, the combined hunting States index decreased 4.3%, and the combined nonhunting States index decreased 11.4% (Table 1).

The mean survey date was May 28 in 1973 and May 26 in 1972 in the Eastern Unit (Table 2). No significant change occurred in mean temperature at the start of the surveys or in the percentage of high disturbance recorded per route between 1972 and 1973. The Eastern Unit had the greatest proportion of survey route stops affected by high disturbance (12%) of any unit in 1973.

Fig. 7. Population indices for breeding mourning doves by management unit, 1963-73.

Fig. 8. Population indices for breeding mourning doves in United States hunting and nonhunting States, 1963-73.

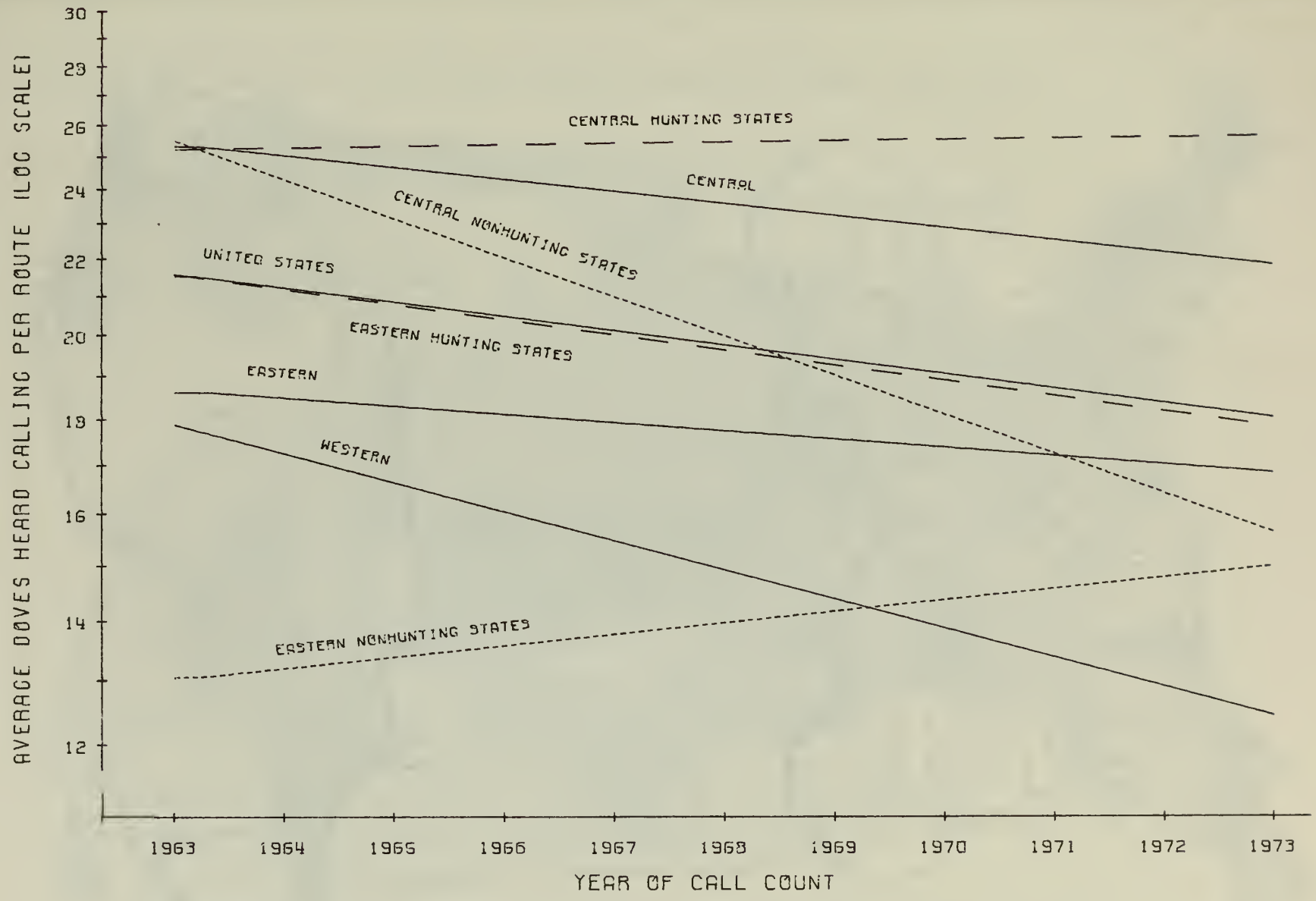


Fig. 9. Linear regression lines of mourning dove call-count, 1963-73.

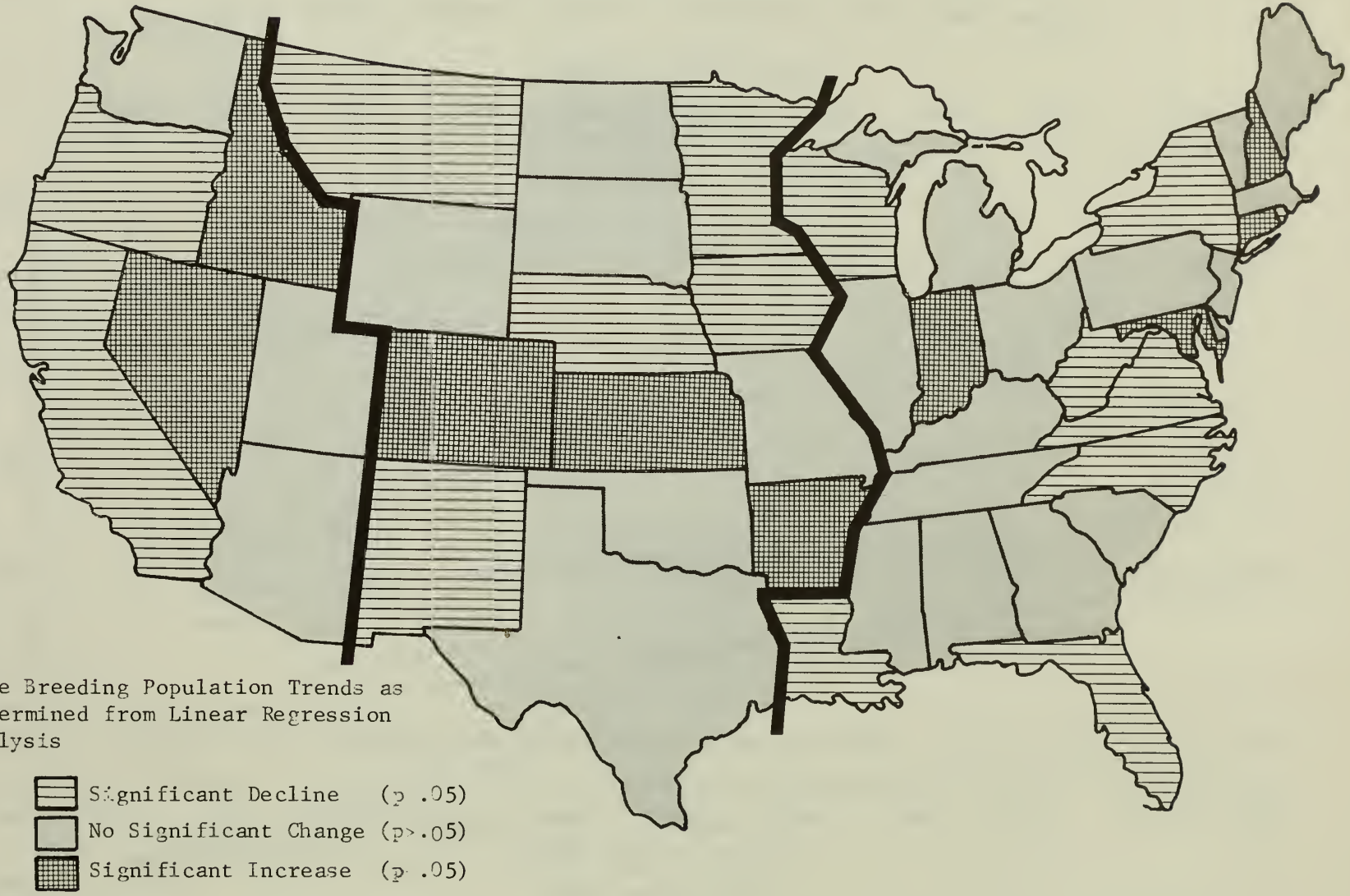

Dove Breeding Population Trends as Determined from Linear Regression Analysis
Significant Decline (p .05)
No Significant Change (p>.05)
Significant Increase (p .05)

Fig. 10. Trends in mourning dove breeding populations by State, 1963 to 1973.

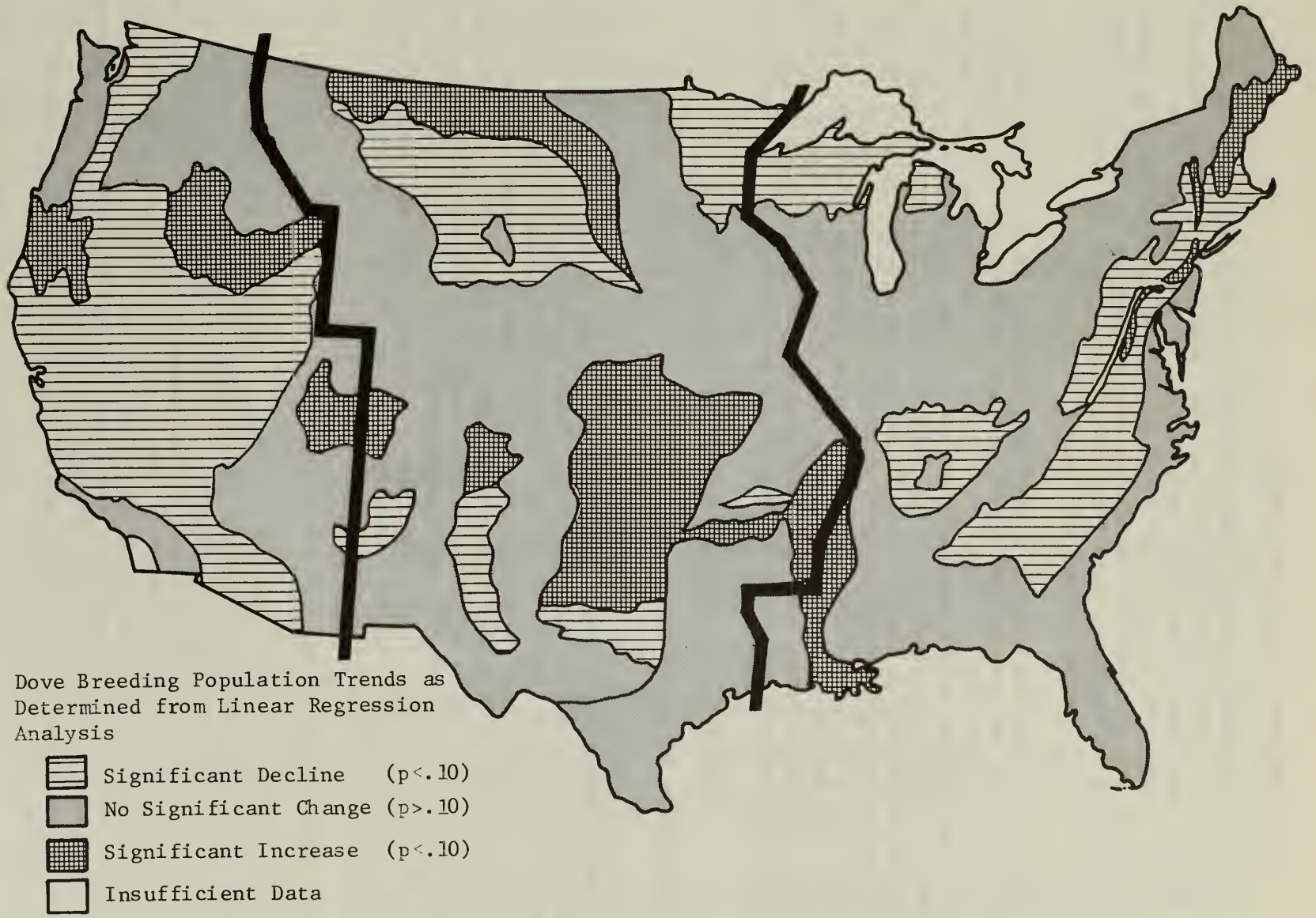


Fig. 11. Trends in mourning dove breeding populations by physiographic region, 1965 to 1973.

1963 to 1973 Long-term Population Trends

The 1973 population indices are at 20-year record low levels for both the Eastern Unit and combined hunting States. The combined nonhunting States index for 1973 is the lowest since 1965. All current indices are below their preceding 10-year means, the Eastern Unit index by 9%, the combined hunting States index by 11%, and the combined nonhunting States index by 3% (Table 3, Figs. 7, 12). Departure of the 1973 index from the long-term mean was greater in the Eastern Unit than for the Central or Western Unit.

Regression analysis shows a significant downward trend in the Eastern Unit population index between 1963 and 1973; the mean rate of decline was determined to be 1.0% per year (Table 3, Fig. 9). During the same period, the combined hunting States index declined significantly at a mean annual rate of 1.9%, whereas the combined nonhunting States index increased at 1.4% per year. The nonhunting States in the Eastern Unit represent the only grouping of States in the Nation having a notable upward population trend. Significant upward trends occurred in Connecticut, Indiana, Maryland, and New Hampshire, representing 7% of the Unit's land area; downward trends were determined for Florida, Louisiana, North Carolina, New York, Rhode Island, Virginia, West Virginia, and Wisconsin, representing 34% of the Unit's land area (Table 3, Fig. 10).

Status of the Central Management Unit Population

1973 Population Distribution

The Central Unit represents 46% of the land area and contains 55% of the total United States dove breeding population. Eight of the Unit's 14 States permitted dove hunting in 1972 (Fig. 2). These hunting States represent 62% of the land area and contain 71% of the total breeding population in the Central Unit. Highest dove population densities in the Unit were reported from southern portions of the Great Plains and over much of the Central Lowlands. Low densities were rather uniformly distributed along the Rocky Mountains and western Great Plains (Fig. 4). States represented by a mean of 30 or more doves heard per route included Kansas, Nebraska, Oklahoma, and South Dakota (Table 1, Fig. 3). Kansas had the highest mean index of any State in the Nation, with 57.2 doves heard calling per route.

1972 to 1973 Population Changes

The Central Unit BDI decreased 8.3% from 24.3 doves heard per route in 1972 to 22.3 doves heard per route in 1973 (Table 1). Population indices increased in those physiographic regions (Fig. 1) representing 36% of the total land area, decreased in 63% of the area, and showed no change in 1% of the area. From 1972 to 1973, no large changes in the population indices occurred within the Great Plains or along the Texas Gulf Coastal Plain. Most of the remaining portions of the Unit had population decreases greater than 10%. Only in North Dakota did the index increase markedly between these years (Figs. 5, 6). The combined hunting States index decreased 11.3%, but increased 0.5% in the combined nonhunting States (Table 1).

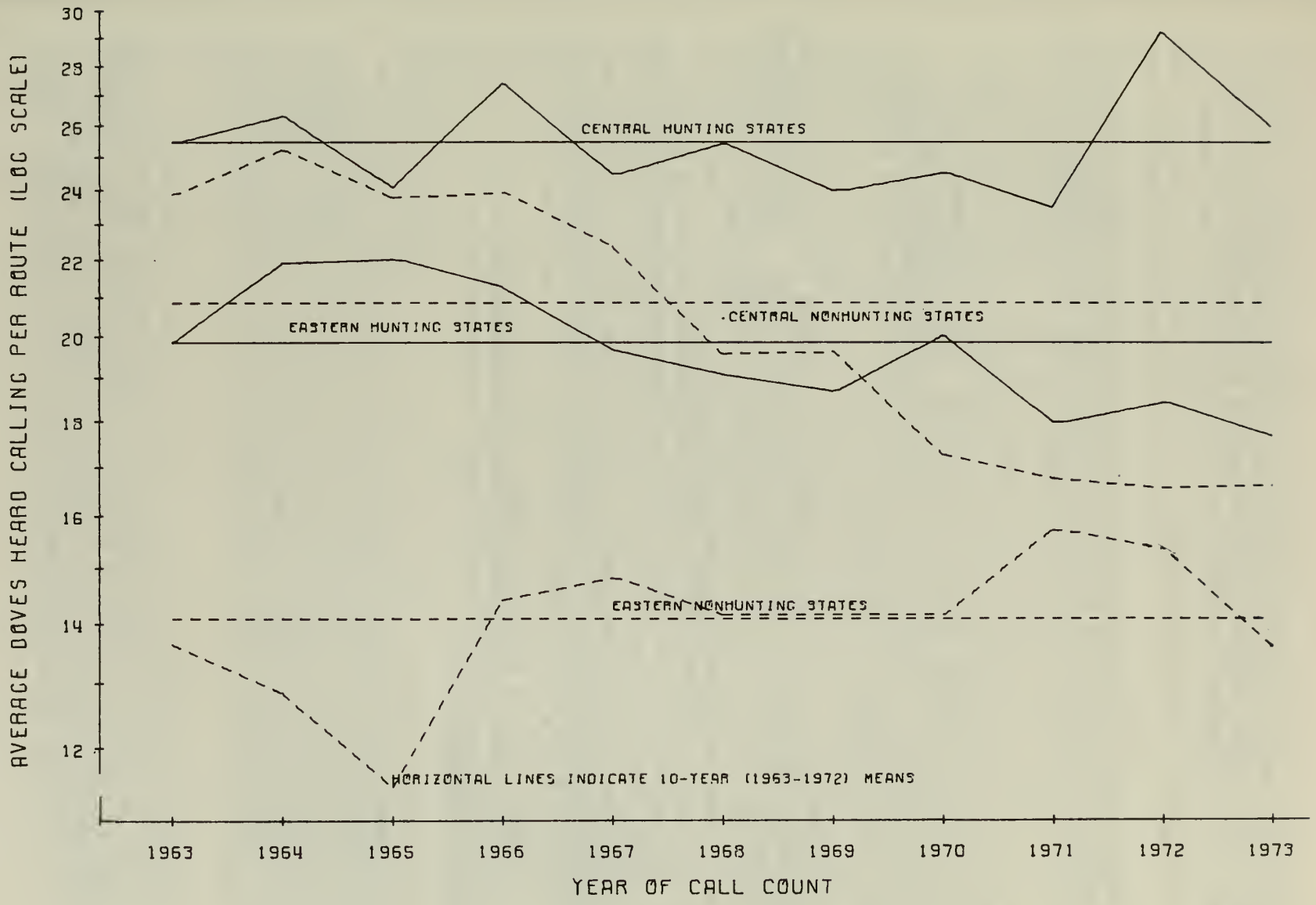


Fig. 12. Population indices for breeding mourning doves in the Eastern and Central Management Unit hunting and nonhunting States, 1963-73.

No important changes occurred between the 1972 and 1973 mean dates the surveys were run or mean temperatures at the start of the surveys or in the percentage of high disturbance recorded per route (Table 2).

1963 to 1973 Long-term Population Trends

The Central Unit BDI has declined during 6 of the last 7 years. Although the index declined to 22.3 doves heard per route in 1973, the current index is well above the record low of 20.8 doves heard per route in 1971 (Table 3, Fig. 7). Analyses of the 1963-73 long-term data show that the 1973 combined hunting States index declined from its 1972 high, whereas the 1973 index for the combined nonhunting States approximated its 1972 record low (Table 3, Fig. 12). Current Central Unit and combined nonhunting States indices are below their preceding 10-year means by 6% and 20%, respectively. The combined hunting States index is above its long-term mean by 2%. The 1973 combined hunting States index represents the only index currently above the preceding 10-year mean for any unit or subunit in the Nation.

Regression analysis shows that a significant downward trend in dove population indices occurred from 1963 to 1973 in the Central Unit. A similar downward trend was observed for the combined nonhunting States. No significant trend in the population indices was shown for combined hunting States (Table 3, Fig. 9). Annual rates of change in the BDI's were determined as follows: Central Unit, down 1.5%, combined hunting States, up 0.2%, and combined nonhunting States, down 4.8%. The annual rate for nonhunting States represents the greatest rate of decline of any unit or subunit. Significant upward population trends were evident in Arkansas, Colorado, and Kansas, representing 17% of the Unit's land area; downward trends occurred in Iowa, Minnesota, Montana, Nebraska, and New Mexico, representing 35% of the area (Table 3, Fig. 10).

Status of the Western Management Unit Population

1973 Population Distribution

The Western Unit represents 24% of the land area and contains 19% of the total United States dove breeding population. All of the Unit's seven States permitted dove hunting in 1972 (Fig. 2). High mourning dove densities were generally restricted in the Western Unit to portions of the Columbia Plateau, Snake River Plain, and Sonoran-Mojave Desert. Densities were low throughout much of the Great Basin and in the northwestern section of the Unit (Fig. 4). Two States, Arizona and Idaho, were represented by a mean of 20 or more doves heard per route (Fig. 3).

1972 to 1973 Population Changes

The Western Unit BDI increased 7.6% from 13.6 doves heard per route in 1972 to 14.6 doves heard per route in 1973 (Table 1). Population indices increased in those physiographic regions (Fig. 1) representing 37% of the land area, decreased in 62% of the area, and showed no change in the remaining 1% of the

land area. Important population increases occurred in the Sonoran-Mojave Desert and in the northern Columbia Plateau (Fig. 6). Elsewhere, regional population levels in 1973 tended to be at least 10% lower than in 1972. The increase in the Western Unit's index from 1972 to 1973 can be attributed to the exceptional 66% increase in Arizona's index. Excluding Arizona data, the Unit's index would have declined 8% between 1972 and 1973.

No important changes occurred between 1972 and 1973 mean dates the surveys were run or mean temperatures at the start of the surveys. The 1973 survey routes were run under slightly higher disturbance conditions (Table 2).

1963 to 1973 Long-term Population Trends

The 1973 Western Unit BDI increased for the second successive year from its record low index established in 1971 (Table 3, Fig. 7). The current population index is 4% below the preceding 10-year mean (Fig. 7), and represents the least departure of any unit. Nevertheless, regression analysis shows a significant downward trend in the dove population index from 1963 to 1973. The BDI declined at an average annual rate of 3.5%--the greatest rate of decline of any unit (Table 3, Fig. 9). Significant upward population trends were determined for Idaho and Nevada, representing 27% of the Unit's land area, with downward trends in California and Oregon, comprising 36% of the area (Table 3, Fig. 10).

Statistical Significance of Data

1972 to 1973 Population Changes

A significant ($p<0.05$) decrease occurred in the BDI of the Central Management Unit between 1972 and 1973 (Table 1). The population index for the combined hunting States in the Central Unit also showed a significant decrease. None of the indices for the other combined hunting States or combined nonhunting States differed significantly ($p<0.05$) between these years. Although not designed to detect population changes within States, the survey showed a significant increase in Arizona. Significant decreases occurred in Missouri and Tennessee (Table 1).

A study of the data from physiographic regions within management unit revealed a significant ($p<0.05$) increase from 1972 to 1973 in the Piedmont Province (Region 041) of the Eastern Unit (Fig. 1). Significant decreases from 1972 to 1973 occurred in Dissected Till Plains (125) and Uinta Basin (212) of the Central Unit. In the Western Unit, significant increases were determined for the Mexican Highland (224) and Middle Cascade Mountains (232), and a significant decrease in the California Coast Ranges (246).

The analyses of several factors associated with the Call-Count Survey showed that the Survey was run later in 1973 than in 1972 ($p<0.05$) for both the Eastern Management Unit and the combined hunting States of the Eastern Unit (Table 2). No other statistically significant differences occurred between years for any unit or subunit in the analysis of mean survey date, temperature at start of survey, or percentage of high disturbance along survey routes.

1963 to 1973 Long-term Population Trends

Linear regression analyses of the 1963-73 data revealed significant ($p<0.05$) downward trends in BDI's for all management units, as well as for the combined hunting States of the Eastern Unit, and combined nonhunting States of the Central Unit (Table 3). No significant trend was established for the combined nonhunting States of the Eastern Unit or combined hunting States of the Central Unit.

Analyses of long-term data by State (Table 3) revealed that nine States representing 17% of the Nation's land area had significant ($p<0.05$) upward population trends between 1963 and 1973. Fifteen States, representing 35% of the land area, had significant long-term downward population trends (Table 3, Fig. 10). From 1965 to 1973, 14 of 79 physiographic regions, represented by 15% of the total land area, had significant ($p<0.10$ upward trends, and 20 regions, with 28% of the land area, had significant downward trends (Table 4, Fig. 11).

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TABLE 1.--CHANGES IN MOURNING DOVE BREEDING DENSITY INDICES ON 20-STOP CALL-COUNT SURVEY ROUTES, 1972-73

EASTERN MANAGEMENT UNIT

STATES	ROUTES	MEAN NUMBER OF DOVES HEARD PER ROUTE[a] ADJUSTED WITHIN YEAR 1972	ADJUSTED WITHIN YEAR 1973	ADJUSTED TO BASE-YEAR 1972	ADJUSTED TO BASE-YEAR 1973	PERCENT CHANGE[b]
		HUNTING STATES				
ALA.	26	20.2	17.9	19.8	17.5	-11.4
DEL.	1	6.0	14.0	4.6	10.7	133.3
FLA.	20	10.3	10.0	7.0	6.8	-2.4
GA.	15	24.3	26.3	10.6	11.5	8.2
ILL.	15	22.1	21.9	27.7	27.5	-0.8
KY.	18	20.6	19.9	28.0	27.0	-3.7
LA.	14	7.4	5.5	8.4	6.2	-25.9
MD.	11	21.6	19.3	26.6	23.8	-10.4
MISS.	19	29.1	27.0	35.0	32.5	-7.2
N.C.	18	19.3	24.5	11.7	14.8	26.6
PA.	11	6.6	5.3	7.0	5.6	-19.4
R.I.	2	9.5	10.0	1.9	2.0	5.3
S.C.	16	21.5	28.1	25.5	33.3	30.8*
TENN.	18	30.3	22.4	38.6	28.6	-25.9**
VA.	8	15.5	18.6	11.2	13.4	19.8*
W. VA.	8	8.9	5.7	8.9	5.7	-36.1
SUBTOTAL	220			18.4	17.6	-4.3
		NONHUNTING STATES				
CONN.	1	1.0	1.0	5.5	5.5	0.0
IND.	14	39.6	35.1	41.6	36.8	-11.5
MASS.	3	6.3	6.3	6.1	6.1	0.0
MAINE	4	0.0	0.0	0.0	0.0	0.0
MICH.	15	8.8	6.7	15.4	11.7	-24.2*
N.H.	3	3.2	6.6	2.1	4.4	107.7
N.J.	3	27.1	24.6	25.5	23.1	-9.3
N.Y.	12	12.3	11.0	6.4	5.7	-10.4
OHIO	8	37.7	30.1	27.5	22.0	-20.0
VT.	2	0.0	0.0	0.0	0.0	0.0
WISC.	14	12.8	14.3	11.2	12.5	11.8
SUBTOTAL	79			15.3	13.6	-11.4*
TOTAL	299			17.4	16.2	-6.8

TABLE 1.--CHANGES IN MOURNING DOVE BREEDING DENSITY INDICES ON 20-STOP CALL-COUNT SURVEY ROUTES, 1972-73--CONTINUED

CENTRAL MANAGEMENT UNIT

STATES	ROUTES	MEAN NUMBER OF DOVES HEARD PER ROUTE[a] ADJUSTED WITHIN YEAR 1972	1973	ADJUSTED TO BASE-YEAR 1972	1973	PERCENT CHANGE[b]
		HUNTING STATES				
ARK.	9	19.6	20.8	24.1	25.5	5.8
COLO.	14	17.4	16.7	20.5	19.7	-3.9
KANS.	13	62.5	58.0	61.6	57.2	-7.2
MO.	16	45.1	33.8	39.9	29.9	-25.0**
N. MEX.	12	17.0	9.8	8.6	4.9	-42.6
OKLA.	13	31.0	30.0	43.6	42.2	-3.3
S. DAK.	17	37.8	40.7	37.7	40.5	7.5
TEX.	30	23.9	18.8	24.0	18.8	-21.5*
SUBTOTAL	124			29.2	25.9	-11.3**
		NONHUNTING STATES				
IOWA	13	26.0	24.1	19.6	18.2	-7.0
MINN.	11	14.9	13.4	13.1	11.7	-10.5
MONT.	10	10.6	8.7	4.7	3.8	-18.2
N. DAK.	12	25.9	33.5	17.9	23.2	29.4
NEBR.	20	38.6	39.2	47.8	48.6	1.6
WYO.	9	16.2	15.1	9.5	8.9	-6.8
SUBTOTAL	75			16.5	16.6	0.5
TOTAL	199			24.3	22.3	-8.3**

TABLE 1.--CHANGES IN MOURNING DOVE BREEDING DENSITY INDICES ON 20-STOP CALL-COUNT SURVEY ROUTES, 1972-73--CONTINUED

WESTERN MANAGEMENT UNIT

STATES	ROUTES	MEAN NUMBER OF DOVES HEARD PER ROUTE[a] ADJUSTED WITHIN YEAR 1972	ADJUSTED WITHIN YEAR 1973	ADJUSTED TO BASE-YEAR 1972	ADJUSTED TO BASE-YEAR 1973	PERCENT CHANGE[b]
			HUNTING STATES			
ARIZ.	31	15.0	25.0	17.5	29.1	66.4**
CALIF.	54	11.9	11.2	11.8	11.1	-6.0
IDAHO	13	10.4	9.1	29.4	25.8	-12.4
NEV.	14	2.3	1.9	6.6	5.4	-18.7
OREG.	16	6.7	6.8	11.2	11.3	1.2
UTAH	12	14.9	12.8	9.2	7.9	-13.7
WASH.	20	8.0	8.6	12.0	12.9	7.5
TOTAL	160			13.6	14.6	7.6

UNITED STATES SUMMARY

STATES	ROUTES	MEAN NUMBER OF DOVES HEARD PER ROUTE[a] ADJUSTED WITHIN YEAR 1972	ADJUSTED WITHIN YEAR 1973	ADJUSTED TO BASE-YEAR 1972	ADJUSTED TO BASE-YEAR 1973	PERCENT CHANGE[b]
HUNT	504			21.0	19.9	-5.4*
NONHUNT	154			16.1	15.5	-3.9
TOTAL	658			19.6	18.6	-5.0*

[a]INDICES OBTAINED FROM COMPARABLE, RANDOMIZED ROUTE DATA ADJUSTED FOR VARIATION IN THE LAND AREA OF EACH PHYSIOGRAPHIC REGION ARE PRESENTED WITHIN YEAR. STATE DATA ADJUSTED TO A BASE-YEAR ARE SHOWN HERE AND IN TABLE 3. UNIT AND SUBUNIT MEANS ARE DERIVED FROM STATE DATA ADJUSTED TO A BASE-YEAR AND WEIGHTED BY TOTAL STATE LAND AREA VALUES.

[b]CALCULATIONS PERFORMED USING THREE SIGNIFICANT POSITIONS. THE NUMBER OF ASTERISKS REPRESENT THE STATISTICAL SIGNIFICANCE LEVEL : * 10 PERCENT; ** 5 PERCENT; *** 1 PERCENT. SIGNIFICANCE LEVELS FOR STATE AND UNIT CHANGES ARE DETERMINED FROM ANALYSES OF DATA PRESENTED WITHIN YEAR.

TABLE 2.--FACTORS ASSOCIATED WITH THE MOURNING DOVE CALL-COUNT SURVEY 1972-73

EASTERN MANAGEMENT UNIT

	DATE OF SURVEY[a]				TEMPERATURE AT START[a]				HIGH DISTURBANCE (%)[a,b]			
STATES	ROUTES	1972	1973	CHANGE	ROUTES	1972	1973	CHANGE	ROUTES	1972	1973	CHANGE
HUNTING STATES												
ALA.	26	MAY 24	MAY 24	0	26	61.3	63.3	2.0	25	12.0	16.3	4.3
DEL.	1	MAY 25	MAY 30	5	1	52.0	55.0	3.0	1	5.0	10.0	5.0
FLA.	17	MAY 26	MAY 25	-1	17	68.3	71.4	3.0*	17	7.9	5.7	-2.2
GA.	15	MAY 26	MAY 28	2	15	61.4	61.9	0.5	14	10.7	10.9	0.3
ILL.	15	MAY 27	MAY 26	-1	15	60.6	56.0	-4.6**	12	17.4	13.5	-3.8
KY.	17	MAY 27	MAY 28	1	17	58.2	55.9	-2.3	17	3.1	5.6	2.5
LA.	12	MAY 25	MAY 30	5	12	65.0	64.5	-0.5	12	8.4	7.8	-0.6
MD.	11	MAY 28	MAY 30	2	11	54.9	63.3	8.3**	10	9.1	9.0	-0.1
MISS.	19	MAY 22	MAY 25	3***	19	59.9	63.1	3.2	19	14.9	14.9	0.0
N.C.	18	MAY 30	MAY 25	-5	18	61.4	57.0	-4.4	15	7.8	10.7	2.9
PA.	10	MAY 26	JUNE 1	6***	10	51.4	53.5	2.0	10	19.8	13.6	-6.2
R.I.	2	MAY 28	MAY 23	-5	2	41.5	46.0	4.5***	2	7.5	22.5	15.0**
S.C.	16	MAY 25	MAY 23	-2	16	61.2	59.0	-2.2	15	10.4	16.8	6.3**
TENN.	18	MAY 23	MAY 25	2	18	60.4	56.9	-3.4*	11	24.2	25.3	1.1
VA.	8	MAY 28	MAY 31	3**	7	53.2	58.1	4.9	7	16.6	15.4	-1.1
W. VA.	6	MAY 28	MAY 29	1	6	57.2	55.5	-1.7	5	16.0	17.0	1.0
SUBTOTAL	211	MAY 26	MAY 27	1**	210	60.4	60.4	-0.0	192	12.7	12.8	0.1
NONHUNTING STATES												
CONN.	1	JUNE 2	MAY 24	-9	1	50.0	50.0	0.0	1	10.0	15.0	5.0
IND.	14	MAY 26	MAY 25	-1	14	56.3	54.8	-1.5	14	9.8	9.6	-0.2
MASS.	3	MAY 29	MAY 28	-1	3	50.1	53.7	3.6	3	4.3	2.9	-1.4
MAINE	0	MAY 15	MAY 15	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
MICH.	13	MAY 24	MAY 28	4	13	51.0	49.3	-1.7	12	7.0	6.2	-0.8
N.H.	2	MAY 25	MAY 28	3	2	39.0	50.0	11.0	1	0.0	0.0	0.0
N.J.	3	MAY 27	MAY 26	-1	3	50.1	56.6	6.5	3	29.4	30.6	1.2
N.Y.	6	MAY 26	MAY 29	3	6	50.1	55.9	5.8	6	6.7	6.5	-0.2
OHIO	8	MAY 26	MAY 28	2	8	56.9	54.7	-2.2	8	11.0	10.0	-0.9
VT.	0	MAY 15	MAY 15	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
WISC.	13	JUNE 1	JUNE 3	2	12	51.2	51.2	-0.0	10	10.4	14.8	4.5
SUBTOTAL	63	MAY 27	MAY 29	2	62	52.3	52.6	0.2	58	9.2	9.9	0.7
TOTAL	274	MAY 26	MAY 28	2**	272	58.0	58.1	0.1	250	11.7	12.0	0.3

TABLE 2.--FACTORS ASSOCIATED WITH THE MOURNING DOVE CALL-COUNT SURVEY 1972-73 --CONTINUED

CENTRAL MANAGEMENT UNIT

	DATE OF SURVEY[a]			TEMPERATURE AT START[b]			HIGH DISTURBANCE (%)[a,b]			
STATES	ROUTES	1972	1973	CHANGE	ROUTES	1972	1973	CHANGE	ROUTES	1972	1973	CHANGE
HUNTING STATES												
ARK.	9	MAY 27	MAY 26	-1	9	61.6	64.4	2.9	8	6.7	3.8	-3.0
COLO.	13	MAY 25	MAY 28	3	13	41.6	41.4	-0.2	13	4.0	2.2	-1.9
KANS.	13	MAY 27	MAY 28	1	13	54.9	56.0	1.2	12	6.9	5.7	-1.2
MO.	16	MAY 25	MAY 26	1	16	60.7	56.8	-3.8**	16	10.9	11.5	0.7
N. MEX.	11	MAY 24	MAY 25	1	11	51.0	52.5	1.6	9	7.6	5.6	-2.0
OKLA.	13	MAY 25	MAY 28	3*	13	62.4	58.3	-4.1**	10	17.1	15.1	-2.1
S. DAK.	17	MAY 26	MAY 27	1	17	51.6	47.6	-4.0**	17	6.3	5.7	-0.6
TEX.	30	MAY 24	MAY 24	0	29	62.6	66.1	3.5***	18	11.4	14.0	2.6
SUBTOTAL	122	MAY 25	MAY 26	1*	121	56.3	56.8	0.5	103	9.1	8.9	-0.2
NONHUNTING STATES												
IOWA	13	MAY 29	MAY 28	-1	13	54.8	49.9	-4.9**	11	5.9	10.5	4.6
MINN.	7	MAY 27	MAY 28	1	7	52.5	52.9	0.4	7	7.1	11.3	4.2
MONT.	7	MAY 30	MAY 24	-6	7	44.4	50.3	5.9	6	13.4	8.6	-4.8
N. DAK.	12	MAY 26	MAY 25	-1	11	50.3	48.0	-2.3	8	2.9	5.7	2.8
NEBR.	20	MAY 23	MAY 29	6***	20	54.5	48.8	-5.7***	18	5.8	5.0	-0.8
WYO.	4	MAY 30	MAY 31	1	4	46.3	43.3	-3.1	4	11.8	3.6	-8.1
SUBTOTAL	63	MAY 28	MAY 27	-1	62	49.7	49.3	-0.3	54	8.6	7.7	-0.8
TOTAL	185	MAY 26	MAY 26	0	183	53.8	54.0	0.2	157	8.9	8.5	-0.4

TABLE 2.--FACTORS ASSOCIATED WITH THE MOURNING DOVE CALL-COUNT SURVEY 1972-73 --CONTINUED

WESTERN MANAGEMENT UNIT

	DATE OF SURVEY[a]			TEMPERATURE AT START[a]				HIGH DISTURBANCE (%)[a,b]			
STATES	ROUTES	1972	1973	CHANGE	ROUTES	1972	1973	CHANGE	ROUTES	1972	1973	CHANGE
					HUNTING STATES							
ARIZ.	29	MAY 27	MAY 28	1	26	54.3	56.7	2.5	22	3.7	1.9	-1.8
CALIF.	41	MAY 28	MAY 29	1	39	53.4	56.9	3.5**	39	9.1	10.6	1.5
IDAHO	12	MAY 30	MAY 26	-4	12	46.1	44.0	-2.1	11	13.4	16.3	2.9
NEV.	11	MAY 24	MAY 23	-1	10	46.6	47.4	0.8	10	0.0	1.5	1.5
OREG.	13	MAY 26	MAY 23	-3	13	43.1	40.9	-2.2	11	7.2	6.4	-0.8
UTAH	11	MAY 26	MAY 29	3*	11	43.9	47.1	3.2	9	1.3	3.7	2.4
WASH.	14	MAY 24	MAY 22	-2	14	50.5	44.5	-5.9	14	6.6	8.8	2.2
TOTAL	131	MAY 27	MAY 26	-1	125	49.0	49.7	0.6	116	6.0	7.0	1.0

UNITED STATES SUMMARY

	DATE OF SURVEY[a]			TEMPERATURE AT START[a]				HIGH DISTURBANCE (%)[a,b]			
STATES	ROUTES	1972	1973	CHANGE	ROUTES	1972	1973	CHANGE	ROUTES	1972	1973	CHANGE
HUNT	464	MAY 26	MAY 26	0*	456	55.0	55.5	0.4	411	9.1	9.4	0.3
NONHUNT	126	MAY 28	MAY 28	0	124	50.5	50.4	-0.2	112	8.8	8.5	-0.3
TOTAL	590	MAY 26	MAY 27	1	580	53.9	54.1	0.3	523	9.0	9.1	0.1

[a] DATA FROM COMPARABLE RANDOMIZED ROUTES ADJUSTED FOR VARIATION IN LAND AREA OF EACH PHYSIOGRAPHIC REGION. CALCULATIONS PERFORMED USING 3 SIGNIFICANT POSITIONS. CHANGE EQUALS THE ARITHMETIC DIFFERENCE. THE NUMBER OF ASTERISKS REPRESENT THE STATISTICAL SIGNIFICANCE LEVEL OF CHANGE: * 10 PERCENT; ** 5 PERCENT; *** 1 PERCENT.

[b] PERCENT OF STOPS (LISTENING STATIONS) WITH THE LEVEL OF DISTURBANCE GREAT ENOUGH TO SERIOUSLY LIMIT AN OBSERVER'S ABILITY TO HEAR CALLING DOVES. 20-STOP SURVEY ROUTE.

TABLE 3.--TRENDS IN MOURNING DOVE BREEDING DENSITY INDICES BY STATE, 1963-73

EASTERN MANAGEMENT UNIT

STATE	LAND AREA WEIGHT	ADJUSTED AVERAGE DOVES HEARD CALLING PER ROUTE[a,b] 1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	LINEAR REGRESSION, 1963-73 PERCENT CHANGE TOTAL	ANNUAL	STAT. SIGN.[c]
HUNTING STATES															
ALA.	33.32	16.3	21.1	20.5	20.5	19.8	16.9	20.6	18.1	16.5	19.8	17.5	-7.1	-0.7	N.S.
DEL.	1.29	5.1	4.4	5.1	3.8	7.5	5.3	5.3	11.4	3.8	4.6	10.7	78.9	6.0	N.S.
FLA.	35.82	9.8	11.2	10.5	9.4	9.1	7.3	8.0	8.8	5.9	7.0	6.8	-40.7	-5.1	P .01
GA.	37.82	14.4	22.5	18.5	13.1	15.4	14.2	15.5	18.9	12.6	10.6	11.5	-33.8	-4.0	P .10
ILL.	35.09	26.9	24.3	23.5	27.0	27.9	27.4	22.9	30.8	24.8	27.7	27.5	8.3	0.8	N.S.
KY.	26.08	27.0	30.4	32.5	35.3	29.9	27.4	27.4	28.0	27.7	28.0	27.0	-12.0	-1.3	N.S.
LA.	31.14	16.6	13.6	11.6	7.7	8.9	7.6	7.4	7.1	7.2	8.4	6.2	-60.5	-8.8	P .01
MD.	6.55	16.1	16.1	16.0	15.2	20.1	17.7	16.9	20.2	19.1	26.6	23.8	60.6	4.9	P .01
MISS.	30.63	30.5	35.1	36.8	33.6	27.7	26.4	28.5	30.5	34.2	35.0	32.5	-1.0	-0.1	N.S.
N.C.	22.51	21.0	21.9	24.8	26.4	21.4	22.7	17.6	18.8	12.5	11.7	14.8	-46.0	-6.0	P .01
PA.	29.01	5.6	7.2	7.4	8.7	11.9	7.9	8.6	6.2	5.9	7.0	5.6	-15.3	-1.6	N.S.
R.I.	0.67	3.5	5.6	3.8	4.4	5.6	2.8	2.6	0.9	2.6	1.9	2.0	-66.9	-10.4	P .05
S.C.	19.99	23.0	24.1	35.3	34.4	34.2	33.5	36.1	29.8	31.2	25.5	33.3	11.7	1.1	N.S.
TENN.	27.07	29.2	28.1	30.4	30.4	22.3	24.2	23.2	36.0	32.3	38.6	28.6	19.3	1.8	N.S.
VA.	26.05	25.2	29.0	24.0	29.1	23.6	31.8	24.4	21.7	18.8	11.2	13.4	-48.1	-6.3	P .01
W. VA.	15.41	18.5	23.4	22.6	9.8	5.0	5.0	5.7	6.6	5.7	8.9	5.7	-86.6	-17.6	P .01
SUBTOTAL	378.45	19.8	21.9	22.0	21.2	19.6	19.0	18.6	20.0	17.9	18.4	17.6	-17.2	-1.9	P .01
NONHUNTING STATES															
CONN.	3.23	3.0	2.4	1.9	2.9	4.5	4.9	0.7	5.5	6.0	5.5	5.5	164.3	10.2	P .05
IND.	23.36	26.8	27.7	20.2	37.2	38.6	41.5	37.9	38.7	49.0	41.6	36.8	65.0	5.1	P .05
MAINE	19.85	1.5	0.0	0.5	0.0	0.0	1.0	1.4	0.0	0.0	0.0	0.0	-92.7	-21.5	N.S.
MASS.	5.31	5.2	6.7	7.7	11.0	14.5	4.9	1.5	5.3	4.7	6.1	6.1	-35.0	-4.2	N.S.
MICH.	37.18	17.4	13.2	8.0	12.3	11.9	9.1	11.7	10.4	14.6	15.4	11.7	-2.8	-0.3	N.S.
N.H.	5.80	0.6	1.1	1.9	1.4	0.9	0.8	0.7	0.8	2.9	2.1	4.4	464.2	19.4	P .05
N.J.	4.91	29.5	30.4	25.7	24.2	20.1	19.5	17.0	21.3	23.6	25.5	23.1	-22.8	-2.6	N.S.
N.Y.	30.49	7.8	7.0	7.1	7.9	7.8	6.9	5.9	5.4	4.9	6.4	5.7	-30.7	-3.6	P .01
OHIO	26.42	17.5	16.8	19.1	26.3	25.5	27.0	30.6	34.0	26.2	27.5	22.0	48.9	4.1	P .10
VT.	5.95	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.0	0.0	0.0	-62.9	-9.4	N.S.
WISC.	36.07	14.1	15.2	16.1	11.1	13.5	11.5	10.0	8.6	11.7	11.2	12.5	-28.9	-3.3	P .05
SUBTOTAL	198.57	13.6	12.8	11.4	14.4	14.8	14.1	14.1	14.1	15.7	15.3	13.6	15.1	1.4	P .10
TOTAL	577.02	17.7	18.8	18.4	18.9	17.9	17.3	17.0	18.0	17.1	17.4	16.2	-9.6	-1.0	P .05

TABLE 3.--TRENDS IN MOURNING DOVE BREEDING DENSITY INDICES BY STATE, 1963-73--CONTINUED

CENTRAL MANAGEMENT UNIT

STATE	LAND AREA WEIGHT	ADJUSTED AVERAGE DOVES HEARD CALLING PER ROUTE[a,b] 1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	LINEAR REGRESSION, 1963-73 PERCENT CHANGE TOTAL	ANNUAL	STAT. SIGN.[c]
HUNTING STATES															
ARK.	34.37	16.0	16.8	14.8	16.5	20.7	20.0	22.3	22.9	24.3	24.1	25.5	72.9	5.6	P .01
COLO.	67.18	11.0	13.1	11.5	14.8	16.1	13.7	19.6	20.5	18.8	20.5	19.7	88.4	6.5	P .01
KANS.	52.43	49.8	53.1	48.2	51.8	60.3	59.0	65.4	60.5	58.7	61.6	57.2	22.2	2.0	P .05
MO.	45.10	36.7	40.2	36.0	39.3	36.6	39.9	25.4	31.4	29.5	39.9	29.9	-19.2	-2.1	N.S.
N. MEX.	77.98	18.1	20.6	19.3	28.4	8.5	12.7	8.8	8.3	6.8	8.6	4.9	-79.5	-14.4	P .01
OKLA.	44.40	39.9	37.7	34.6	29.3	37.9	39.8	30.2	26.4	14.6	43.6	42.2	-9.7	-1.0	N.S.
S. DAK.	49.20	40.6	39.0	35.1	45.3	28.2	31.2	28.7	30.5	36.5	37.7	40.5	-7.5	-0.8	N.S.
TEX.	170.03	17.7	17.4	16.4	17.8	16.8	17.3	16.5	18.8	18.7	24.0	18.8	22.5	2.1	P .10
SUBTOTAL	540.69	25.4	26.3	24.0	27.4	24.4	25.4	23.9	24.5	23.4	29.2	25.9	2.2	0.2	N.S.
NONHUNTING STATES															
IOWA	36.15	33.5	34.9	29.0	33.2	34.1	30.6	25.8	17.1	20.8	19.6	18.2	-50.9	-6.9	P .01
MINN.	54.09	16.2	20.5	18.6	18.7	16.7	18.2	10.7	8.7	13.0	13.1	11.7	-44.4	-5.7	P .01
MONT.	94.47	15.1	15.4	15.7	17.1	18.7	5.7	6.6	5.0	6.5	4.7	3.8	-83.3	-16.0	P .01
NEBR.	49.69	58.7	66.1	55.6	48.5	40.0	47.9	47.3	46.7	45.3	47.8	48.6	-24.0	-2.7	P .05
N. DAK.	45.54	20.0	20.2	23.4	20.7	20.7	24.2	20.3	16.8	17.1	17.9	23.2	-8.7	-0.9	N.S.
WYO.	62.33	12.7	9.8	12.1	15.9	13.0	9.3	20.7	19.5	9.5	9.5	8.9	-8.9	-0.9	N.S.
SUBTOTAL	342.27	23.8	25.2	23.7	23.9	22.3	19.5	19.6	17.2	16.7	16.5	16.6	-38.7	-4.8	P .01
TOTAL	882.96	24.8	25.9	23.9	26.1	23.6	23.1	22.2	21.7	20.8	24.3	22.3	-13.8	-1.5	P .05

TABLE 3.--TRENDS IN MOURNING DOVE BREEDING DENSITY INDICES BY STATE, 1963-73--CONTINUED

WESTERN MANAGEMENT UNIT

STATE	LAND AREA WEIGHT	ADJUSTED AVERAGE DOVES HEARD CALLING PER ROUTE[a,b] 1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	LINEAR REGRESSION, 1963-73 PERCENT CHANGE TOTAL	ANNUAL	STAT. SIGN.[c]
HUNTING STATES															
ARIZ.	72.65	22.7	27.6	26.6	30.4	27.6	24.2	27.0	20.0	13.1	17.5	29.1	-23.4	-2.6	N.S.
CALIF.	101.71	29.2	32.0	21.6	17.3	14.2	11.9	11.5	10.9	11.1	11.8	11.1	-74.8	-12.7	P .01
IDAHO	54.37	18.3	20.6	19.4	18.6	17.8	18.0	17.0	21.8	22.7	29.4	25.8	47.6	4.0	P .05
NEV.	71.27	1.8	2.9	2.7	4.0	4.4	8.2	6.3	5.7	3.3	6.6	5.4	127.3	8.6	P .05
OREG.	62.27	16.8	18.1	14.1	14.0	12.9	13.2	15.0	10.3	11.9	11.2	11.3	-36.8	-4.5	P .01
UTAH	53.34	13.4	12.9	13.7	14.8	22.2	12.6	9.4	7.8	13.8	9.2	7.9	-40.0	-5.0	N.S.
WASH.	43.87	9.8	13.2	13.1	13.3	11.4	10.5	11.1	12.3	12.4	12.0	12.9	4.9	0.5	N.S.
TOTAL	459.48	17.3	19.5	16.4	16.3	15.7	14.1	14.0	12.5	12.1	13.6	14.6	-30.3	-3.5	P .01

UNITED STATES SUMMARY

STATE	LAND AREA WEIGHT	ADJUSTED AVERAGE DOVES HEARD CALLING PER ROUTE[a,b] 1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	LINEAR REGRESSION, 1963-73 PERCENT CHANGE TOTAL	ANNUAL	STAT. SIGN.[c]
HUNT	1378.62	21.2	22.8	20.9	22.0	20.2	19.9	19.1	19.3	18.1	21.0	19.9	-12.0	-1.3	P .05
NONHUNT	540.84	20.1	20.6	19.2	20.4	19.5	17.5	17.6	16.0	16.3	16.1	15.5	-26.4	-3.0	P .01
TOTAL	1919.46	20.9	22.2	20.4	21.5	20.0	19.2	18.7	18.4	17.6	19.6	18.6	-16.0	-1.7	P .01

[a] THE AVERAGE NUMBER OF DOVES HEARD PER ROUTE ADJUSTED ANNUALLY TO A BASE YEAR ACCORDING TO THE PERCENT CHANGE FROM PRECEDING YEAR ON COMPARABLE ROUTES. EXCEPT AS NOTED, 1967 SELECTED AS BASE YEAR, REPRESENTING THE MEAN NUMBER OF DOVES HEARD ON COMPARABLE ROUTES RUN IN BOTH 1966 AND 1967. MAINE, N.H., R.I., AND VT. INDICES ASSIGNED 1971 BASE YEAR, REPRESENTING THE MEAN NUMBER OF DOVES HEARD ON COMPARABLE ROUTES RUN IN BOTH 1970 AND 1971. SEE TEXT FOR ADDITIONAL INFORMATION.

[b] UNIT AND SUBUNIT INDICES DERIVED FROM WEIGHTED STATE VALUES (THIS TABLE) CARRIED TO 3 POSITIONS.

[c] STATISTICAL SIGNIFICANCE OF TRENDS: N.S. = NOT SIGNIFICANT (P>.10); N.E. = NO ESTIMATE AVAILABLE.

TABLE 4.--TRENDS IN MOURNING DOVE BREEDING DENSITY INDICES BY PHYSIOGRAPHIC REGION, 1965-73

EASTERN MANAGEMENT UNIT

REGION	LAND AREA WEIGHT	ADJUSTED AVERAGE DOVES HEARD CALLING PER ROUTE[a,b] 1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	LINEAR REGRESSION, 1965-73 PERCENT CHANGE[c] TOTAL	ANNUAL	STAT. SIGN.[d]
10	32.10	N.E.	N.E.	8.8	4.3	3.8	3.6	2.8	2.0	3.4	3.4	3.2	-63.7	-11.9	P .10
31	15.34	N.E.	N.E.	29.5	30.3	28.5	28.2	21.5	24.9	27.5	31.1	26.5	-6.9	-0.9	N.S.
32	16.40	N.E.	N.E.	53.0	39.3	45.8	47.9	44.5	39.6	40.1	33.8	37.7	-26.6	-3.8	P .05
33	24.79	N.E.	N.E.	13.4	10.2	10.1	9.1	9.1	11.5	7.2	10.2	9.7	-21.6	-3.0	N.S.
34	63.72	N.E.	N.E.	26.8	22.9	20.6	17.7	20.4	21.2	19.9	23.5	21.4	-10.4	-1.4	N.S.
35	20.50	N.E.	N.E.	27.1	28.4	29.1	27.4	28.7	34.8	36.7	32.8	34.3	32.2	3.5	P .01
36	15.69	N.E.	N.E.	18.1	19.6	18.0	16.6	16.3	16.3	20.2	20.9	21.3	16.2	1.9	N.S.
37	33.14	N.E.	N.E.	12.1	12.7	11.8	10.5	16.0	17.6	8.5	5.3	7.8	-37.2	-5.7	N.S.
41	39.35	N.E.	N.E.	19.3	21.1	17.6	22.8	17.9	16.7	13.7	9.8	12.2	-46.4	-7.5	P .01
42	3.51	N.E.	N.E.	14.6	24.1	24.6	35.7	31.4	27.3	31.5	33.1	37.3	79.5	7.6	P .01
51[e]	1.93	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.
52	6.09	N.E.	N.E.	10.0	13.2	11.2	13.2	7.7	11.8	10.3	12.2	12.2	3.3	0.4	N.S.
61	17.62	N.E.	N.E.	25.6	25.6	20.5	16.4	19.1	33.0	24.8	32.2	25.9	28.4	3.2	N.S.
62	18.99	N.E.	N.E.	17.0	15.4	12.2	15.6	16.8	14.4	11.0	12.2	10.2	-32.6	-4.8	P .05
70[e]	2.40	N.E.	N.E.	N.E.	N.E.	0.0	N.E.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N.S.
81	27.02	N.E.	N.E.	7.4	9.2	14.5	12.2	9.3	7.9	7.8	10.0	8.5	-13.8	-1.8	N.S.
82	1.32	N.E.	N.E.	N.E.	3.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	-100.0	-74.7	P .10
85	32.72	N.E.	N.E.	5.4	6.5	4.9	3.3	4.1	3.7	5.1	4.8	4.3	-22.2	-3.1	N.S.
86	7.27	N.E.	N.E.	11.2	10.8	7.9	9.4	9.7	9.5	7.1	8.7	7.4	-29.1	-4.2	P .05
91	9.28	N.E.	N.E.	N.E.	28.7	35.3	17.8	4.7	10.2	11.3	11.6	11.7	-77.9	-19.4	P .10
92[e]	10.00	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	0.4	0.7	2.6	1.9	3.9	1322.6	94.2	P .05
93[e]	20.12	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N.S.
95	1.64	N.E.	N.E.	N.E.	N.E.	1.5	1.5	1.5	3.9	2.0	4.0	4.0	225.4	21.7	P .05
100	6.71	N.E.	N.E.	N.E.	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-100.0	-68.0	N.S.
111	25.51	N.E.	N.E.	43.3	45.1	39.3	38.5	35.6	35.1	37.8	38.0	31.3	-23.3	-3.3	P .01
112	6.70	N.E.	N.E.	18.2	31.3	17.0	14.2	20.8	17.7	18.1	17.4	16.4	-26.2	-3.7	N.S.
113	2.07	N.E.	N.E.	27.0	27.0	10.9	17.6	15.2	17.5	12.4	21.2	18.8	-28.9	-4.2	N.S.
121	46.46	N.E.	N.E.	10.0	15.6	15.7	12.6	15.3	13.1	15.9	15.5	12.9	12.3	1.5	N.S.
123	12.09	N.E.	N.E.	22.7	18.6	23.0	19.8	15.3	16.0	19.8	20.5	18.1	-14.6	-2.0	N.S.
124	56.27	N.E.	N.E.	28.2	32.9	35.3	36.3	34.1	40.1	34.2	35.1	33.0	11.2	1.3	N.S.
141	0.27	N.E.	N.E.	30.3	26.2	32.6	33.5	27.8	30.7	24.7	37.2	24.4	-4.1	-0.5	N.S.
TOTAL/ AVERAGE	577.02	N.E.	N.E.	18.4	18.9	17.9	17.3	17.0	18.0	17.1	17.4	16.2	-10.2	-1.3	P .01

TABLE 4.--TRENDS IN MOURNING DOVE BREEDING DENSITY INDICES BY PHYSIOGRAPHIC REGION, 1965-73--CONT.

CENTRAL MANAGEMENT UNIT

REGION	LAND AREA WEIGHT	ADJUSTED AVERAGE DOVES HEARD CALLING PER ROUTE[a,b] 1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	LINEAR REGRESSION, 1965-73 PERCENT CHANGE[c] TOTAL	ANNUAL	STAT. SIGN.[d]
10	30.37	N.E.	N.E.	8.8	4.3	3.8	3.6	2.8	2.0	3.4	3.4	3.2	-63.7	-11.9	P .10
35	16.60	N.E.	N.E.	27.1	28.4	29.1	27.4	28.7	34.8	36.7	32.8	34.3	32.2	3.5	P .01
36	77.45	N.E.	N.E.	18.1	19.6	18.0	16.6	16.3	16.3	20.2	20.9	21.3	16.2	1.9	N.S.
122	64.68	N.E.	N.E.	34.1	37.0	33.6	35.5	27.4	25.1	30.5	31.2	37.1	-8.7	-1.1	N.S.
123	2.54	N.E.	N.E.	22.7	18.6	23.0	19.8	15.3	16.0	19.8	20.5	18.1	-14.6	-2.0	N.S.
124	0.82	N.E.	N.E.	28.2	32.9	35.3	36.3	34.1	40.1	34.2	35.1	33.0	11.2	1.3	N.S.
125	58.68	N.E.	N.E.	38.9	46.5	43.1	50.8	37.7	33.2	38.3	45.0	35.2	-14.0	-1.9	N.S.
126	71.40	N.E.	N.E.	35.4	36.0	43.3	43.6	37.9	43.1	38.6	52.1	45.8	29.3	3.3	P .05
130	14.35	N.E.	N.E.	50.9	67.8	37.4	49.3	45.3	41.5	37.5	39.5	22.8	-47.8	-7.8	P .05
131	46.47	N.E.	N.E.	18.5	15.7	12.9	20.7	24.1	19.6	22.3	24.1	21.3	44.1	4.7	P .10
132	81.54	N.E.	N.E.	41.1	45.0	37.1	23.0	21.0	18.4	23.2	20.5	20.8	-61.9	-11.4	P .01
133[e]	2.89	N.E.	N.E.	5.0	5.0	0.0	N.E.	41.0	71.1	23.2	31.4	30.0	-47.7	-15.0	N.S.
134	97.09	N.E.	N.E.	27.5	22.0	20.0	24.2	23.8	22.9	22.6	23.2	22.9	-6.2	-0.8	N.S.
135	25.78	N.E.	N.E.	50.8	53.1	61.7	59.3	64.8	66.7	61.6	68.1	66.6	28.6	3.2	P .01
136	16.40	N.E.	N.E.	16.6	15.4	14.7	12.6	19.4	20.7	10.9	20.5	19.1	22.9	2.6	N.S.
137	10.54	N.E.	N.E.	2.3	11.0	4.2	6.1	7.4	11.1	9.4	5.2	49.4	******	371.0	P .10
138	19.75	N.E.	N.E.	114.3	165.0	28.7	41.6	14.8	17.3	4.9	9.0	4.2	-100.0	-82.4	P .05
139	22.05	N.E.	N.E.	1.8	1.6	24.5	8.7	19.8	17.0	9.6	12.1	8.7	55.3	5.7	N.S.
141	27.75	N.E.	N.E.	30.3	26.2	32.6	33.5	27.8	30.7	24.7	37.2	24.4	-4.1	-0.5	N.S.
142	3.11	N.E.	N.E.	19.4	7.4	5.0	2.3	3.5	2.3	1.9	6.1	2.3	-96.9	-35.1	P .10
151	4.70	N.E.	N.E.	6.7	20.2	13.0	21.0	21.5	15.9	20.6	26.2	14.8	59.0	6.0	N.S.
152	6.98	N.E.	N.E.	3.0	3.0	3.3	3.9	4.9	3.3	5.0	4.9	5.2	79.3	7.6	P .01
160	28.53	N.E.	N.E.	2.9	5.1	2.6	4.4	7.5	5.2	4.3	5.8	3.1	23.4	2.7	N.S.
170	24.23	N.E.	N.E.	10.9	14.5	17.2	8.1	13.4	17.9	12.2	13.0	11.3	-3.1	-0.4	N.S.
180	23.58	N.E.	N.E.	3.7	5.6	6.4	7.7	7.7	7.4	5.8	5.0	3.0	-13.1	-1.7	N.S.
190	33.18	N.E.	N.E.	8.2	9.9	7.1	6.1	7.2	8.2	10.3	8.8	8.2	8.5	1.0	N.S.
212	4.68	N.E.	N.E.	8.2	22.7	55.7	9.9	14.4	5.4	17.5	7.5	10.1	-64.0	-12.0	N.S.
213	6.02	N.E.	N.E.	0.9	1.4	4.0	4.2	6.2	8.1	9.5	6.7	7.9	519.1	25.6	P .01
214	11.49	N.E.	N.E.	8.3	16.9	7.1	9.0	10.3	8.8	4.8	13.6	21.2	56.9	5.8	N.S.
216	7.07	N.E.	N.E.	84.7	75.6	28.7	46.5	20.6	17.9	48.7	28.1	15.0	-80.4	-18.4	P .05
224	31.91	N.E.	N.E.	20.5	18.7	16.8	15.2	15.5	13.2	14.4	18.2	24.9	7.4	0.9	N.S.
225	10.33	N.E.	N.E.	N.E.	5.6	2.2	3.9	6.1	12.3	0.3	5.1	5.1	13.7	1.9	N.S.
TOTAL/ AVERAGE	882.96	N.E.	N.E.	23.9	26.1	23.6	23.1	22.2	21.7	20.8	24.3	22.3	-10.3	-1.3	N.S.

TABLE 4.--TRENDS IN MOURNING DOVE BREEDING DENSITY INDICES BY PHYSIOGRAPHIC REGION, 1965-73--CONT.

WESTERN MANAGEMENT UNIT

REGION	LAND AREA WEIGHT	ADJUSTED AVERAGE DOVES HEARD CALLING PER ROUTE[a,b] 1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	LINEAR REGRESSION, 1965-73 PERCENT CHANGE[c] TOTAL	ANNUAL	STAT. SIGN.[d]
180	8.00	N.E.	N.E.	3.7	5.6	6.4	7.7	7.7	7.4	5.8	5.0	3.0	-13.1	-1.7	N.S.
190	32.19	N.E.	N.E.	8.2	9.9	7.1	6.1	7.2	8.2	10.3	8.8	8.2	8.5	1.0	N.S.
201	27.15	N.E.	N.E.	8.9	9.9	9.0	11.2	9.1	8.3	9.9	9.2	11.6	11.3	1.3	N.S.
202	5.05	N.E.	N.E.	6.5	7.2	5.8	8.4	5.9	7.5	7.5	6.3	5.7	-6.3	-0.8	N.S.
203	19.43	N.E.	N.E.	6.8	16.0	21.1	16.4	17.3	18.6	22.7	22.3	21.2	86.9	8.1	P .05
204	11.00	N.E.	N.E.	12.2	23.3	22.2	20.9	14.4	22.6	18.1	31.9	34.8	97.8	8.9	P .05
205	6.17	N.E.	N.E.	92.8	172.3	39.8	30.9	44.3	28.7	15.7	13.8	6.9	-100.0	-82.4	P .05
211	8.20	N.E.	N.E.	7.7	10.2	9.5	5.0	0.0	6.7	14.4	27.8	0.0	65.7	6.5	N.S.
212	5.96	N.E.	N.E.	8.2	22.7	55.7	9.9	14.4	5.4	17.5	7.5	10.1	-64.0	-12.0	N.S.
213	12.24	N.E.	N.E.	0.9	1.4	4.0	4.2	6.2	8.1	9.5	6.7	7.9	519.1	25.6	P .01
214	12.54	N.E.	N.E.	8.3	16.9	7.1	9.0	10.3	8.8	4.8	13.6	21.2	56.9	5.8	N.S.
215	13.78	N.E.	N.E.	6.9	11.8	13.7	10.0	29.2	14.4	12.6	17.5	6.4	18.5	2.1	N.S.
216	1.46	N.E.	N.E.	84.7	75.6	28.7	46.5	20.6	17.9	48.7	28.1	15.0	-80.4	-18.4	P .05
221	115.89	N.E.	N.E.	11.1	11.5	14.1	13.8	10.2	9.0	9.1	9.1	7.0	-39.2	-6.0	P .05
222	35.86	N.E.	N.E.	50.0	49.5	36.8	31.1	27.6	18.7	14.4	17.5	27.5	-69.7	-13.8	P .01
223	4.20	N.E.	N.E.	25.4	21.9	22.4	18.5	19.6	26.1	27.9	28.0	26.7	26.4	3.0	N.S.
224	24.20	N.E.	N.E.	20.5	18.7	16.8	15.2	15.5	13.2	14.4	18.2	24.9	7.4	0.9	N.S.
231	7.99	N.E.	N.E.	16.9	12.1	11.9	12.2	15.2	11.2	9.5	10.0	9.9	-36.3	-5.5	P .05
232	14.07	N.E.	N.E.	7.9	8.1	5.5	4.9	3.0	2.1	4.4	1.5	2.3	-83.5	-20.2	P .01
233[e]	4.42	N.E.	N.E.	46.6	20.0	19.0	N.E.	N.E.	N.E.	14.5	18.5	22.8	57.2	25.4	P .05
234	16.87	N.E.	N.E.	11.0	12.2	11.9	10.9	9.3	10.7	8.9	9.6	8.6	-26.5	-3.8	P .01
241	8.84	N.E.	N.E.	0.5	0.0	2.5	2.5	0.8	0.8	0.0	0.5	0.0	-72.5	-14.9	N.S.
242	2.95	N.E.	N.E.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N.S.
243	8.29	N.E.	N.E.	28.2	10.1	4.0	28.2	2.0	6.0	4.0	16.0	0.0	-83.3	-20.1	N.S.
244	10.48	N.E.	N.E.	6.6	5.4	4.9	6.8	7.3	7.1	8.7	5.9	13.8	104.7	9.4	P .10
245	13.01	N.E.	N.E.	20.5	15.3	12.6	13.3	13.5	11.1	14.0	14.4	8.9	-38.1	-5.8	P .05
246	19.64	N.E.	N.E.	31.2	26.2	22.8	23.5	21.3	21.1	21.2	25.0	18.6	-29.0	-4.2	P .05
247	8.10	N.E.	N.E.	7.4	5.2	4.3	1.8	6.0	6.0	3.2	1.8	9.0	-4.7	-0.6	N.S.
250[e]	1.50	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.
TOTAL/ AVERAGE	459.48	N.E.	N.E.	16.4	16.3	15.7	14.1	14.0	12.5	12.1	13.6	14.6	-20.1	-2.8	P .05

TABLE 4.--TRENDS IN MOURNING DOVE BREEDING DENSITY INDICES BY PHYSIOGRAPHIC REGION, 1965-73

FOOTNOTES

[a] THE AVERAGE NUMBER OF DOVES HEARD PER ROUTE ADJUSTED ANNUALLY TO A BASE YEAR ACCORDING TO THE PERCENT CHANGE FROM PRECEDING YEAR ON COMPARABLE ROUTES. THE BASE YEAR REPRESENTS THE MEAN NUMBERS OF DOVES HEARD PER ROUTE IN 1968, 1969, AND 1970; THE RESULTANT VALUE BEING ASSIGNED TO 1969. N.E. = NO ESTIMATE AVAILABLE.

WHEN A PHYSIOGRAPHIC REGION IS BISECTED BY A MANAGEMENT UNIT BOUNDARY, ITS MEAN BREEDING DENSITY INDEX IS ASSIGNED TO BOTH UNITS.

[b] THE MANAGEMENT UNIT BREEDING INDICES ARE OBTAINED FROM TABLE 3.

[c] REGRESSION ANALYSIS: (1) 0.0 CALCULATED AS 0.0001.
(2) ANNUAL PERCENT CHANGE GREATER THAN 999 EQUALS NO ESTIMATE (N.E.).

[d] STATISTICAL SIGNIFICANCE OF TREND: N.S. = NOT SIGNIFICANT (P>.10); N.E. = NO ESTIMATE AVAILABLE.

[e] LINEAR REGRESSION ANALYSIS FROM MOST RECENT AVAILABLE DATA, RESULTS NOT COMPARABLE TO OTHER ANALYSES.

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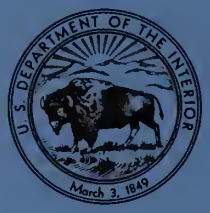

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